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INTERIM EXECUTIVE DIRECTOR

HEARING CENTER OF EXCELLENCE

State of the Science Blast Tinnitus Presentation
15 November 2011

OVERVIEW

- HCE Introduction and Purpose
- HCE Virtual Operation
- Tinnitus – Fitness for Duty
- Otologic causes of tinnitus
- Summary

INTRODUCTION AND PURPOSE

INTRODUCTION

- Warrior Centric
- Combat is extremely chaotic
- The ability to hear and communicate is
 - Critical to the safety of each warrior and unit
 - Central to effective command and control
 - A vital component for mission accomplishment
 - A key consideration in Force Management
 - Attrition, retrain, replace
- HCE Mission is to Combat Hearing Loss
 - Prevent loss
 - Individual Risk - Enterprise Risk
 - Restore capability



EXECUTIVE MANDATE

- Public Law 110-417 Duncan Hunter NDAA 2009 Section 721:
 - Secretary of Defense shall establish within the DOD centers of excellence to include a COE focused on the prevention, diagnosis, mitigation, treatment and rehabilitation of hearing loss and auditory system injury
 - The Secretary shall ensure that the center:
 - **Collaborates** to the maximum extent practicable with the Secretary of Veterans Affairs, institutions of higher education, and other appropriate public and private entities (including international entities)
 - Collaboratively **develops a registry** with bi-directional data exchange to identify and track incidence and care for hearing loss and auditory injury
 - **Utilize registry data** to encourage and facilitate the conduct of research, development of best practices, and clinical education.

GAP ANALYSIS

- The goals of HCE efforts will address the following gaps:
 - Escalating incidence of hearing loss, tinnitus, auditory injury and their compensation
 - Military noise production and exposure
 - Military requirement for enhanced communication and situational awareness
 - Current understanding of auditory injury patterns and limited threshold sensitivity of diagnostic capabilities

GAP ANALYSIS

	ISSUE	GAP
SCOPE	Members at risk for auditory-vestibular injury and incidence of tinnitus and hearing loss along with Veterans claims and compensations are rising.	Current prevention practices have not impacted the rising incidence. Efficient mechanisms and resources for collaborative education and research are not in place.
SCIENCE	Auditory-vestibular injury patterns can be substantial before the thresholds of current diagnostics detect decline.	Limited by current surveillance tools.
ENGINEERING	Some military noise levels exceed personal protective capabilities.	Current medical solutions limited and engineering standards for hearing protection are overridden by operational needs.

GAP ANALYSIS

	ISSUE	GAP
MILITARY PARADOX	Specific operational requirements to communicate in high level noise environments.	No current specification requirements exist for passive, level dependent or tactical hearing protective devices.
PERSONAL ACCOUNTABILITY	Personnel perceptions: Protective devices are cumbersome and degrade function, effectiveness, survivability, and lethality as a warrior. The prevalence of a vocational noise hazard is high.	Lack of scientific evidence on the relationship of hearing protective devices on Military effectiveness. No standard for fitting, training and education of troops with hearing protective devices. Little personal accountability for hearing preservation.

COE STRUCTURE



DEPARTMENT OF DEFENSE
**HEARING CENTER
OF EXCELLENCE**



COE DEFINITION

- The DOD COE criteria include developing Pathways of Care covering the clinical spectrum from prevention through reintegration or transition

SCOPE	HCE MEETS	IN PROGRESS
Guidance regarding structured documentation (EHR)		✓
Clinical practice guidelines	✓	✓
Educational materials		✓
Innovation and identification of research priorities	✓	✓
Strategies for improving access to care		✓

INITIAL OPERATING CAPABILITY MAY 2011



CENTERS FOR HEARING AND BALANCED CARE

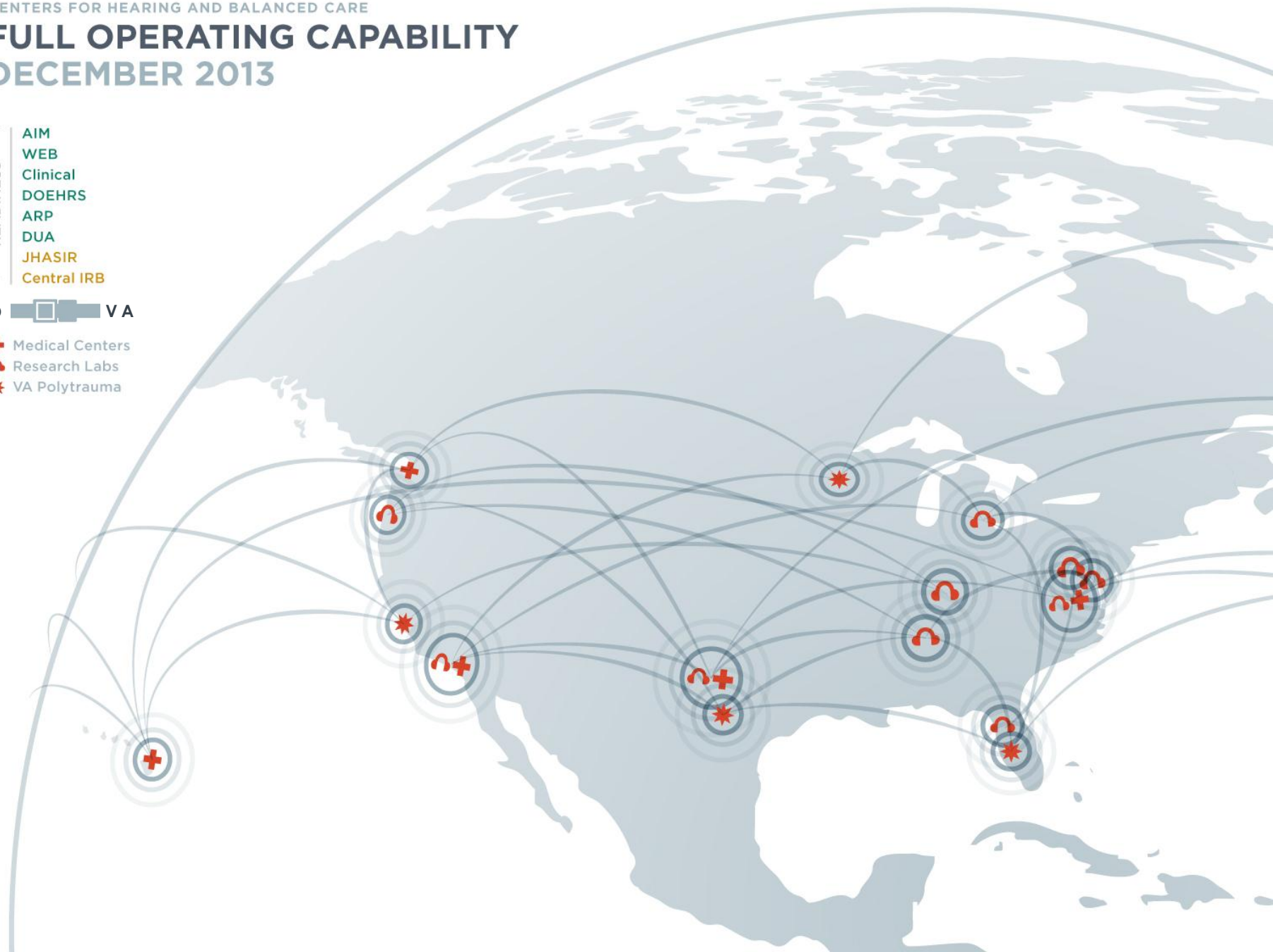
FULL OPERATING CAPABILITY DECEMBER 2013

↑
READINESS
↓

AIM
WEB
Clinical
DOEHRS
ARP
DUA
JHASIR
Central IRB

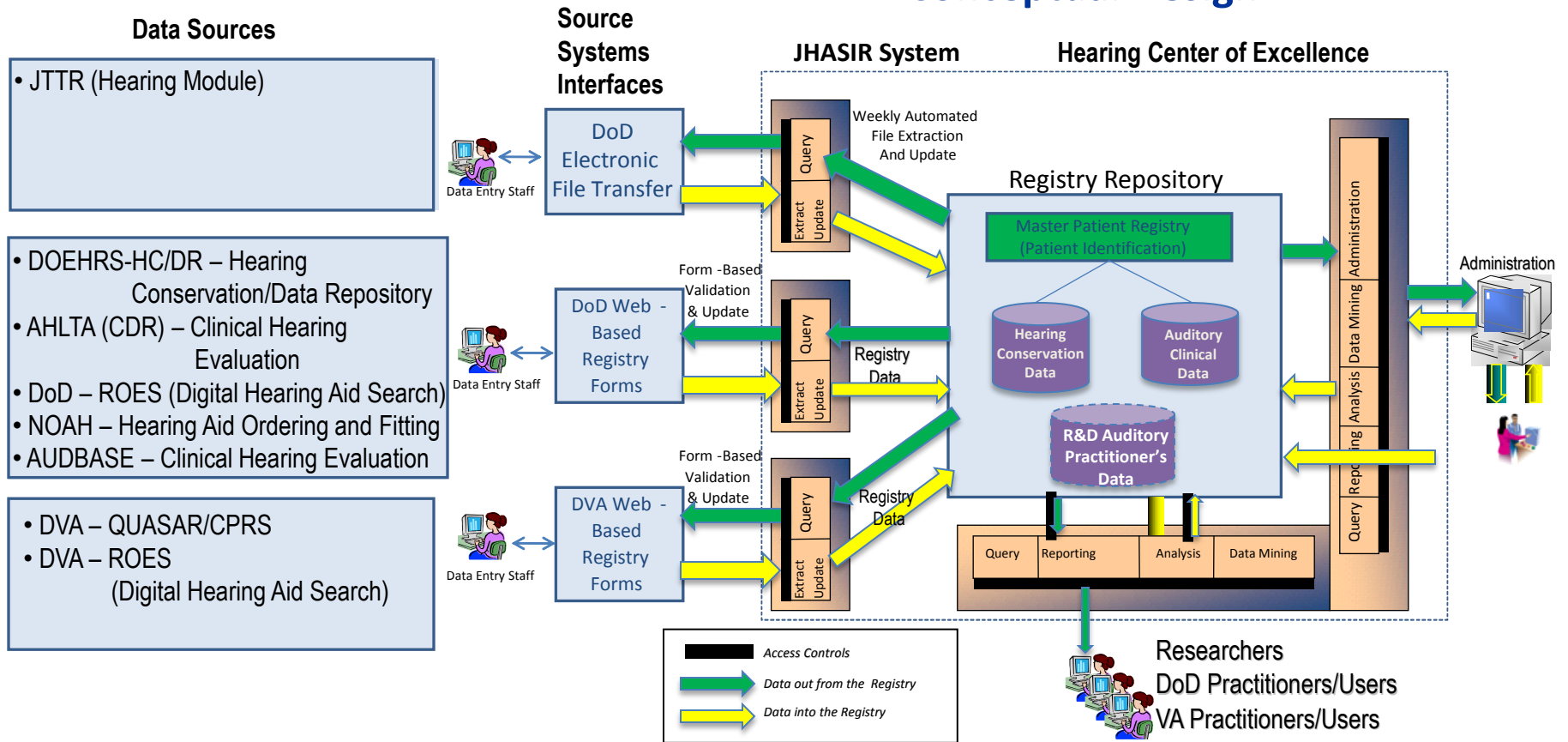
DoD  VA

+ Medical Centers
⌋ Research Labs
* VA Polytrauma

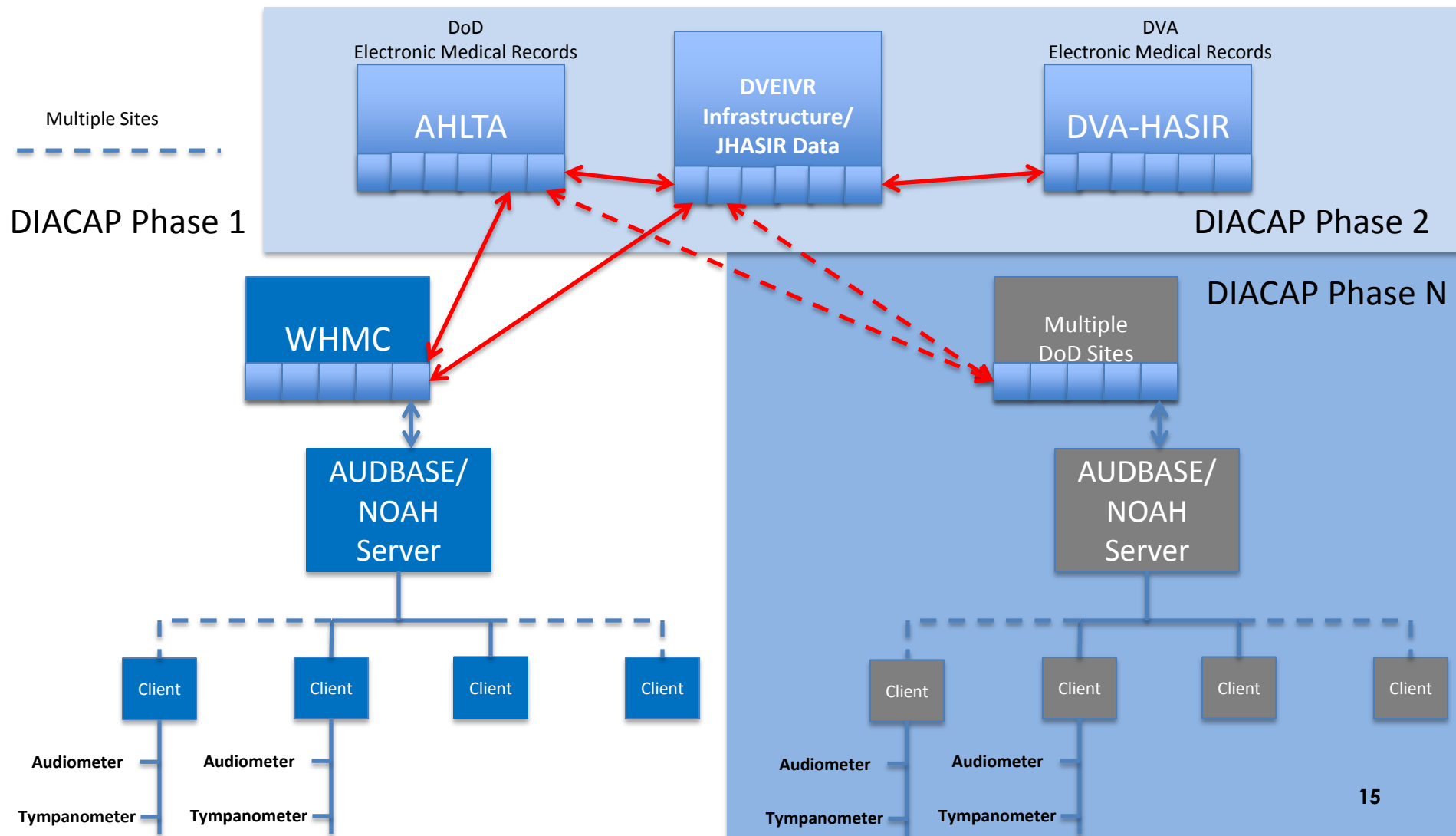


The Joint Hearing and Auditory System Injury Registry

Joint Hearing and Auditory System Injury Registry Conceptual Design

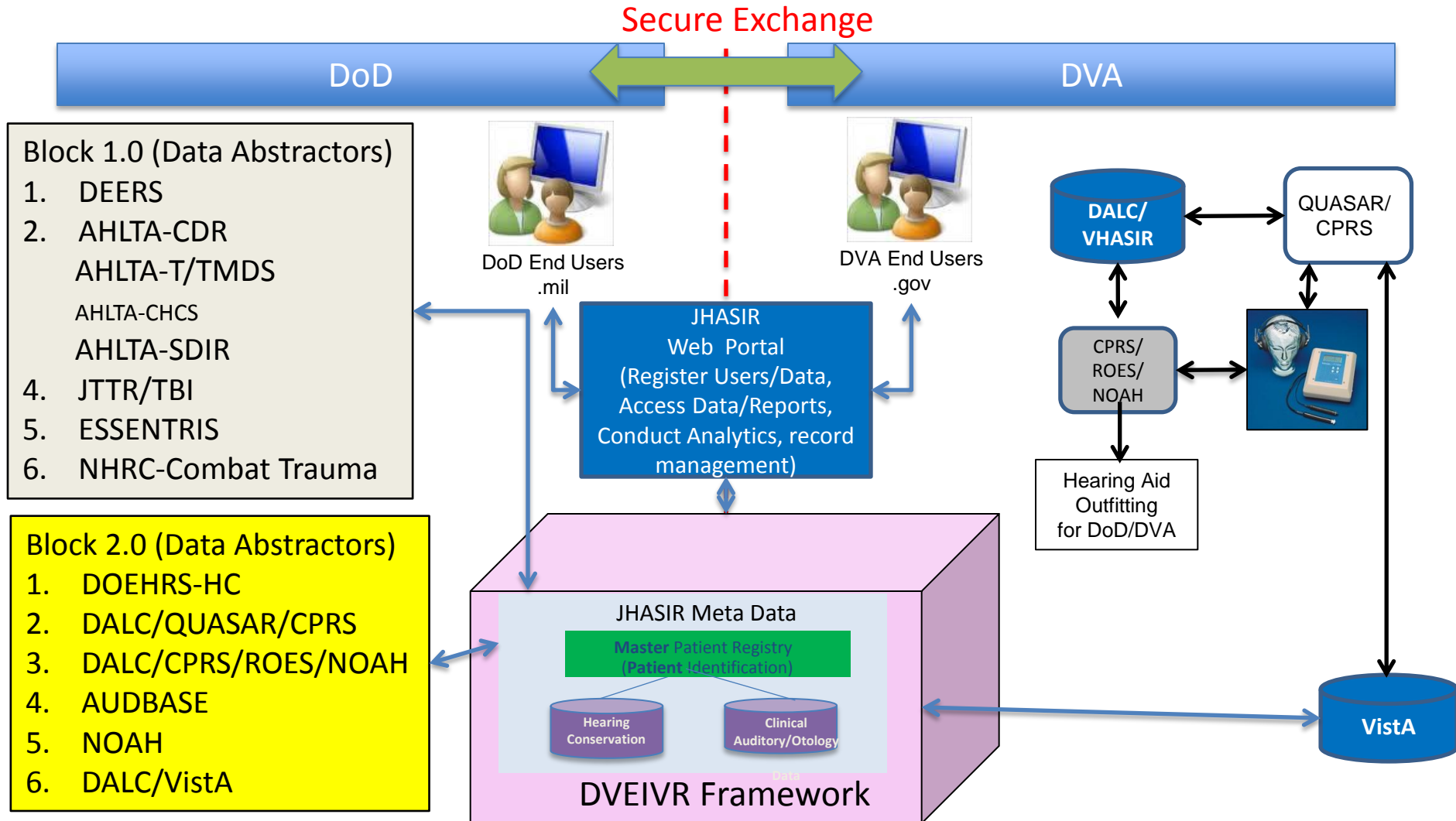


Clinical Auditory and Otology Records



JHASIR

Enterprise Architecture



FEATURE

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PAST FEATURES



EVENT CALENDAR

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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

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BLOG

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IN THE NEWS

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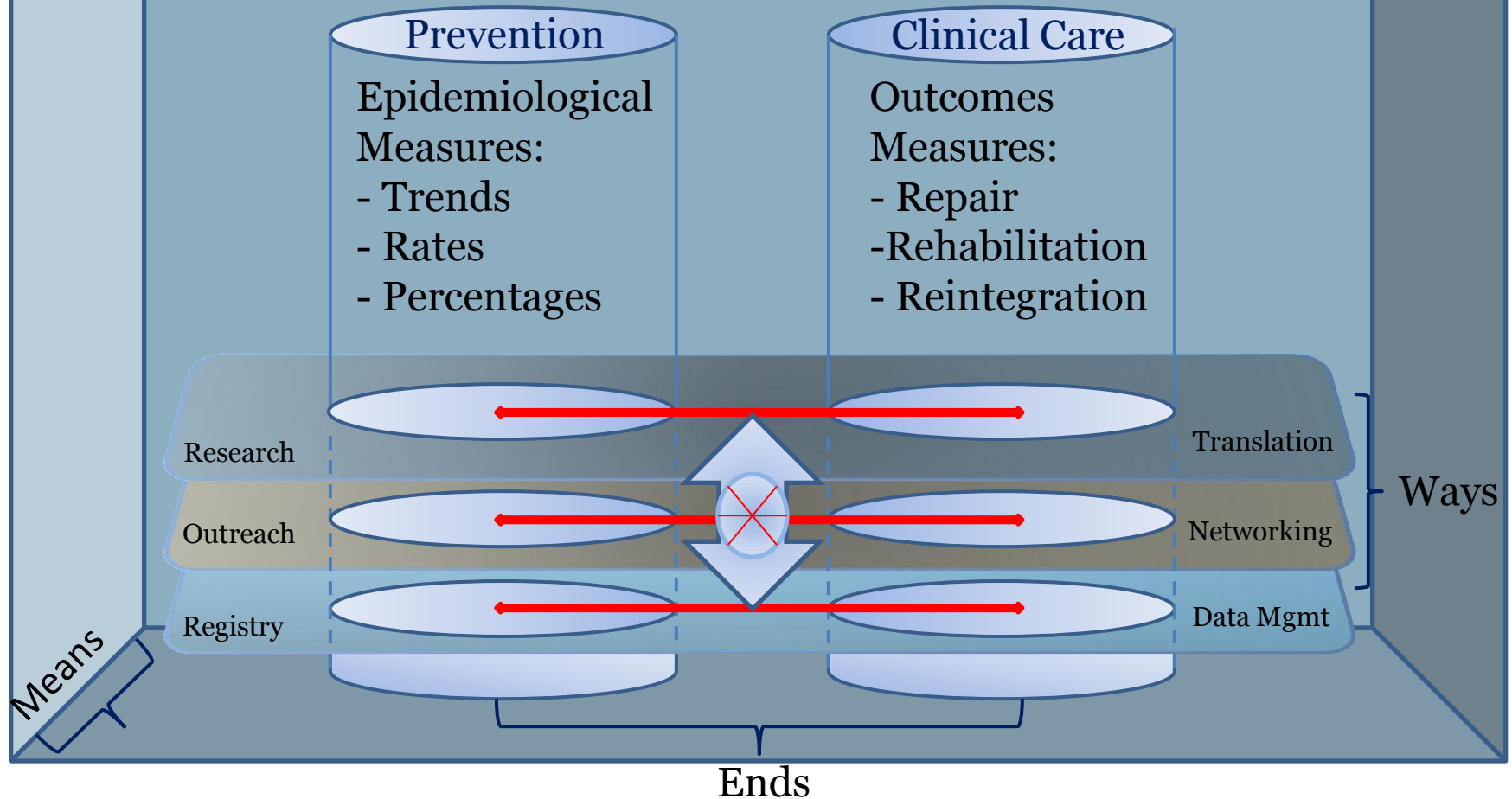
MULTIMEDIA



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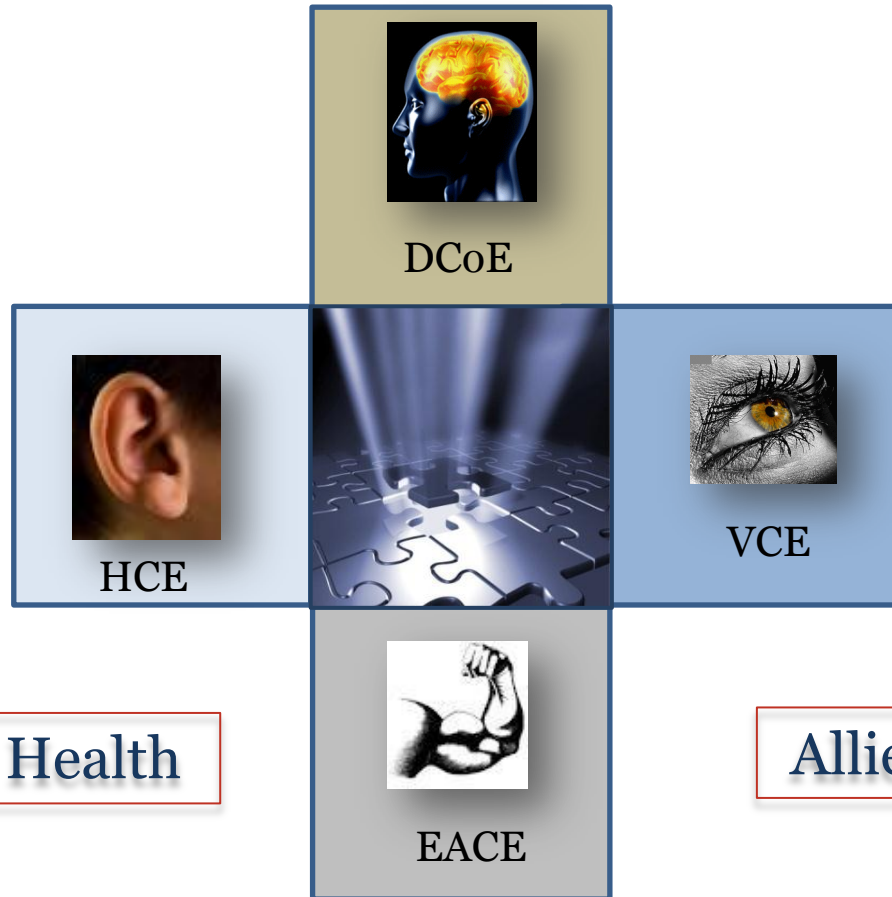
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Hearing Center of Excellence



COE INTEGRATION

Sensory Ecosystem



Integrated for Health

Allied against injury

COLLABORATION WITH OTHER COEs

- Coordination and integration with the DVA and other COEs is a priority
- Partnering with the Defense/Veterans Eye Injury and Vision Registry (DVEIVR) on JHASIR data management and sharing solutions
- Potential partners:
 - Joint Theater Trauma System/Registry (JTTS/R)
 - The Vision Center of Excellence (VCE)
 - Defense Center of Excellence (DCoE)
 - National Intrepid Center of Excellence (NICoE)
 - The Center for the Intrepid (CFI)
 - The Institute of Surgical Research, Battlefield Health and Trauma
 - The VA National Center for Rehabilitation and Auditory Research

TINNITUS FITNESS FOR DUTY

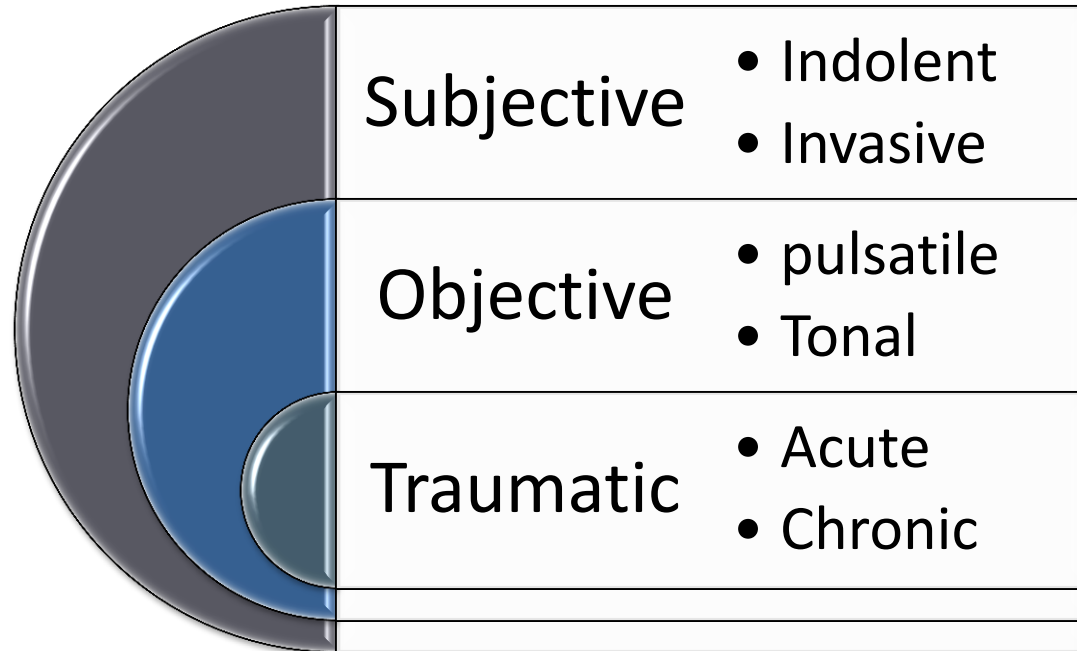
Sherlock Holmes

- First, distract target, then block his blind jab, counter with cross to left cheek.
- **Discombobulate.** *Dazed, he'll attempt wild haymaker.*
- Employ elbow block, and body shot.
- Block feral left, weaken right jaw. Now fracture.
- Break cracked ribs, traumatize solar plexus, dislocate jaw entirely.
- Heel kick to diaphragm.
- **In summary: ears ringing**, jaw fractured, three ribs cracked, four broken, diaphragm hemorrhaging.
- Physical recovery: six weeks.
- Full psychological recovery: six months.
- Capacity to spit at back of head: neutralized.



TINNITUS

- Sherlock's logical fight employed tactics to:
 - Impair senses – Vision – Hearing – Pain
- Outcome:
 - physical and psych profile similar to Wounded warriors
- Nearly 820,000 “Discombobulated” Veterans
- Polytrauma, Multi Sensory Impairment is the rule
- Physical Recovery...
- Psychological Recovery...
- Hearing loss and tinnitus impose wild haymaker to recovery
- Ability to interact – Neutralized.



OTOLOGIC TINNITUS

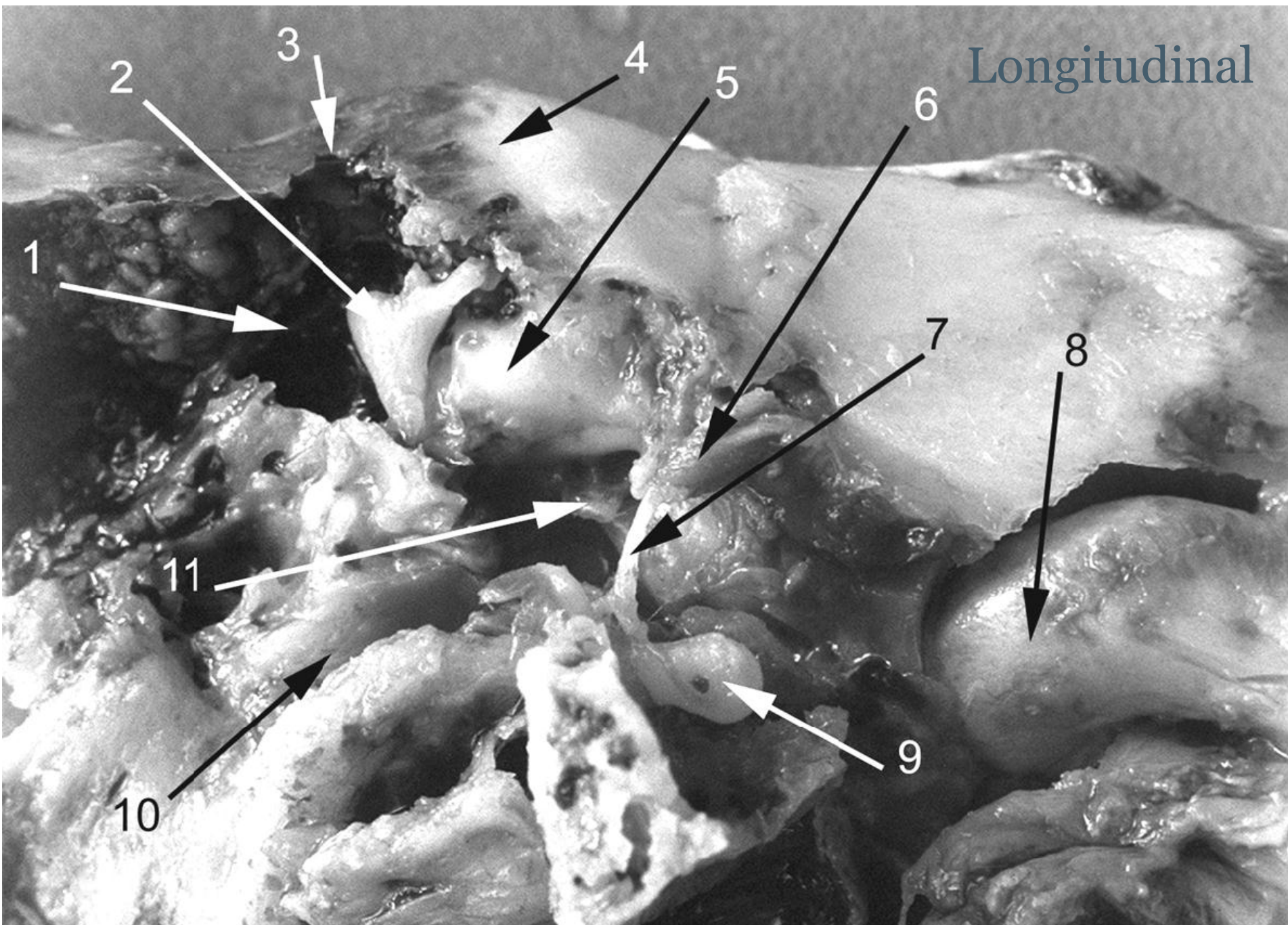
Squamosa

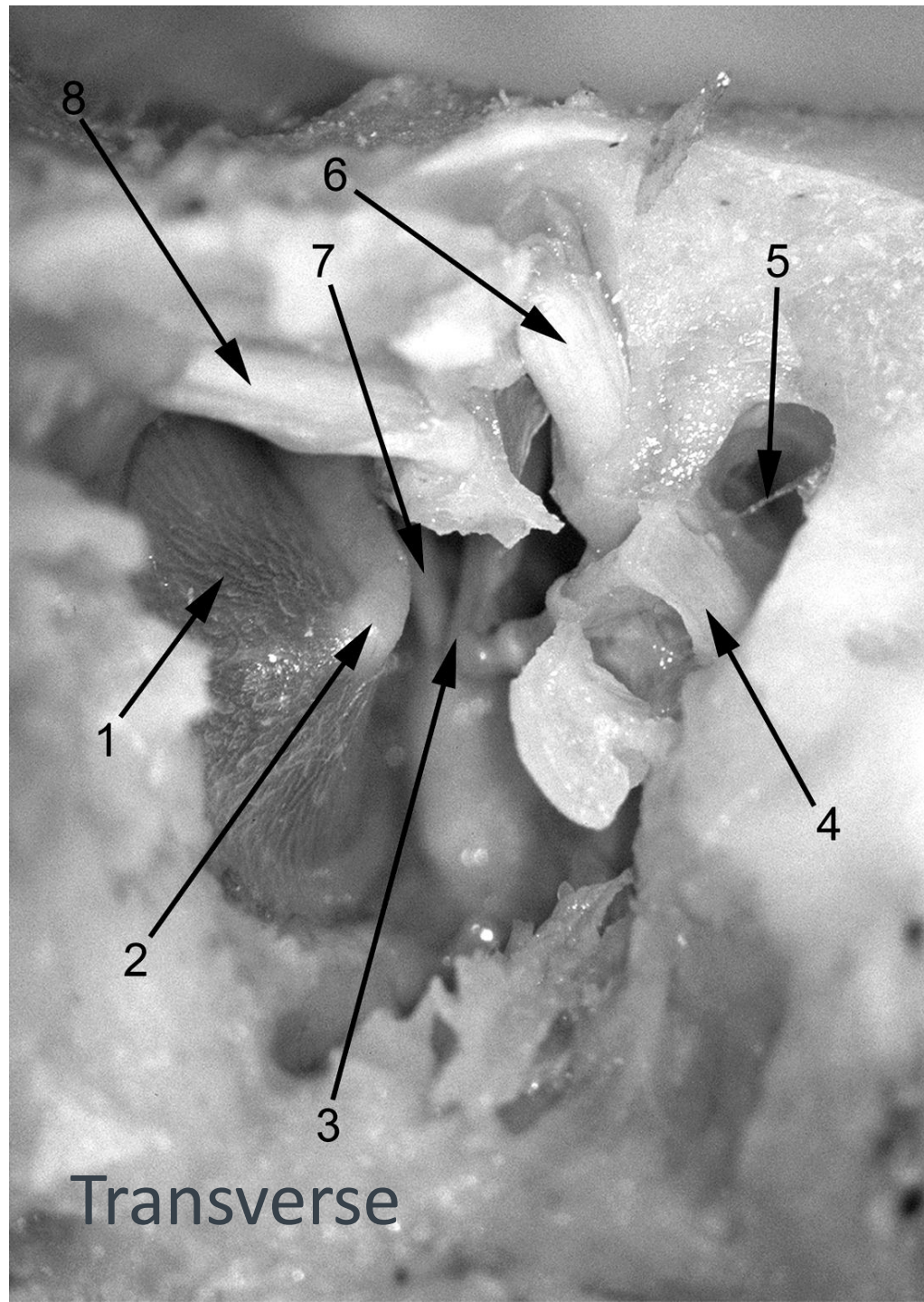


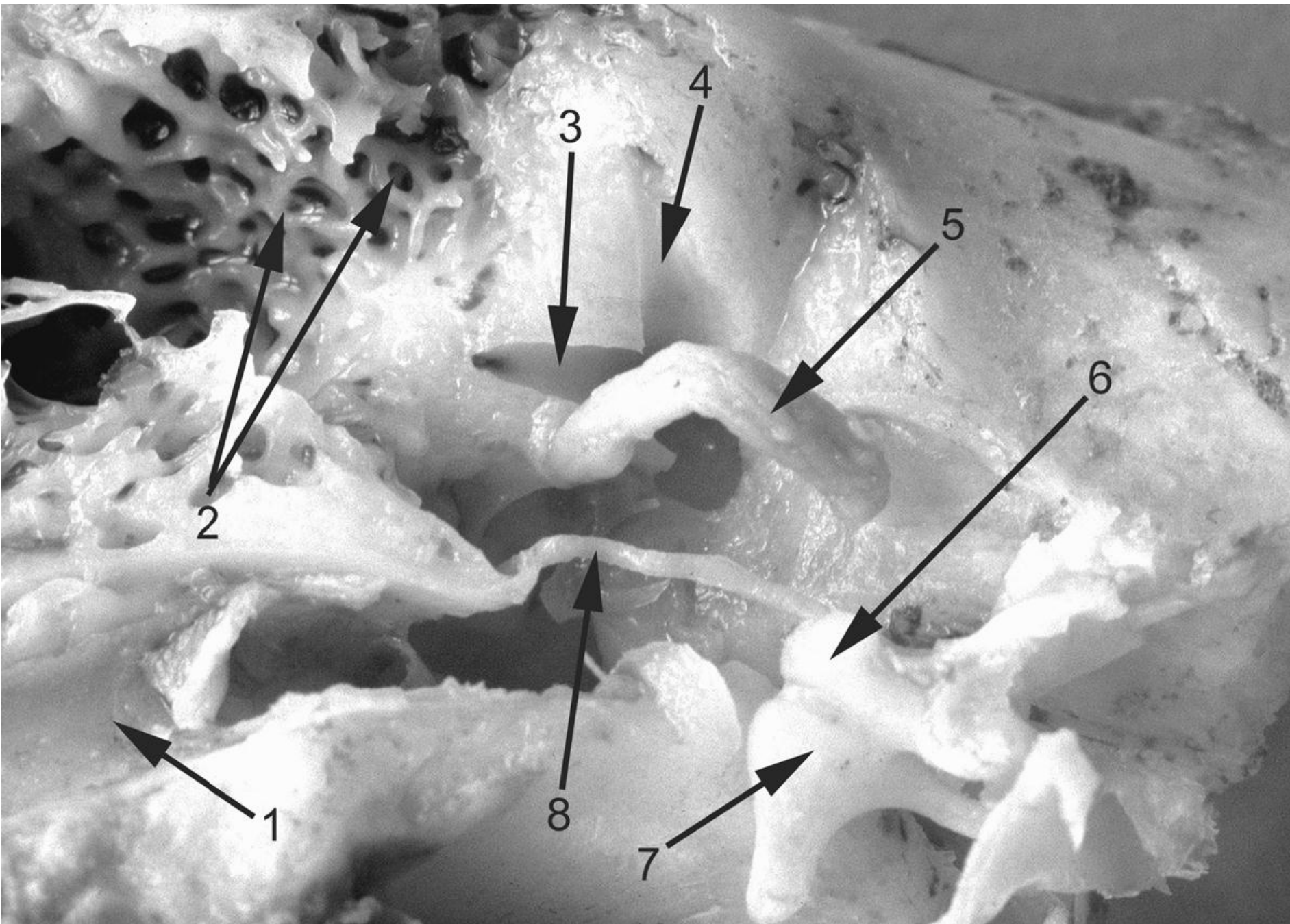
Mastoid



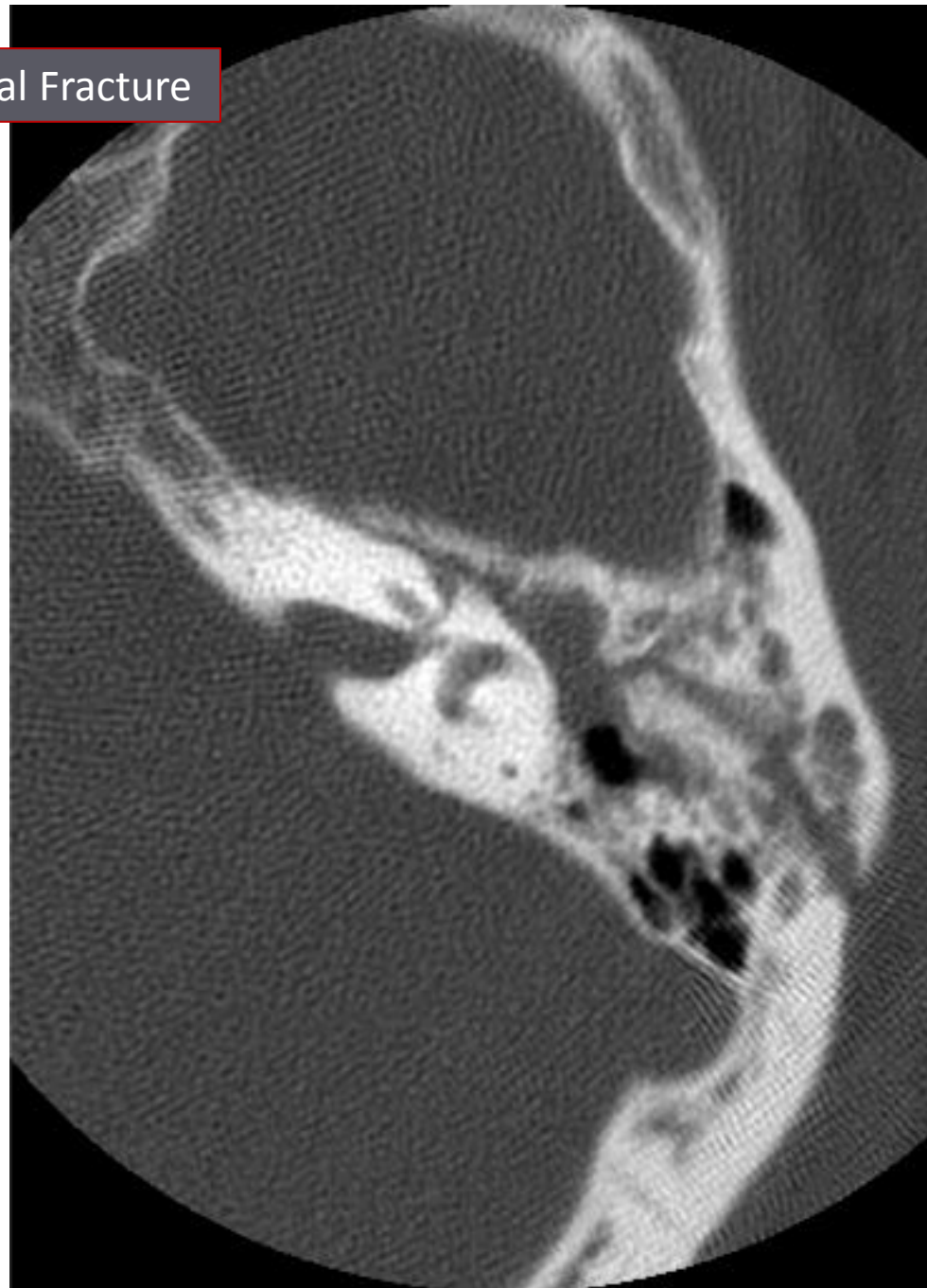
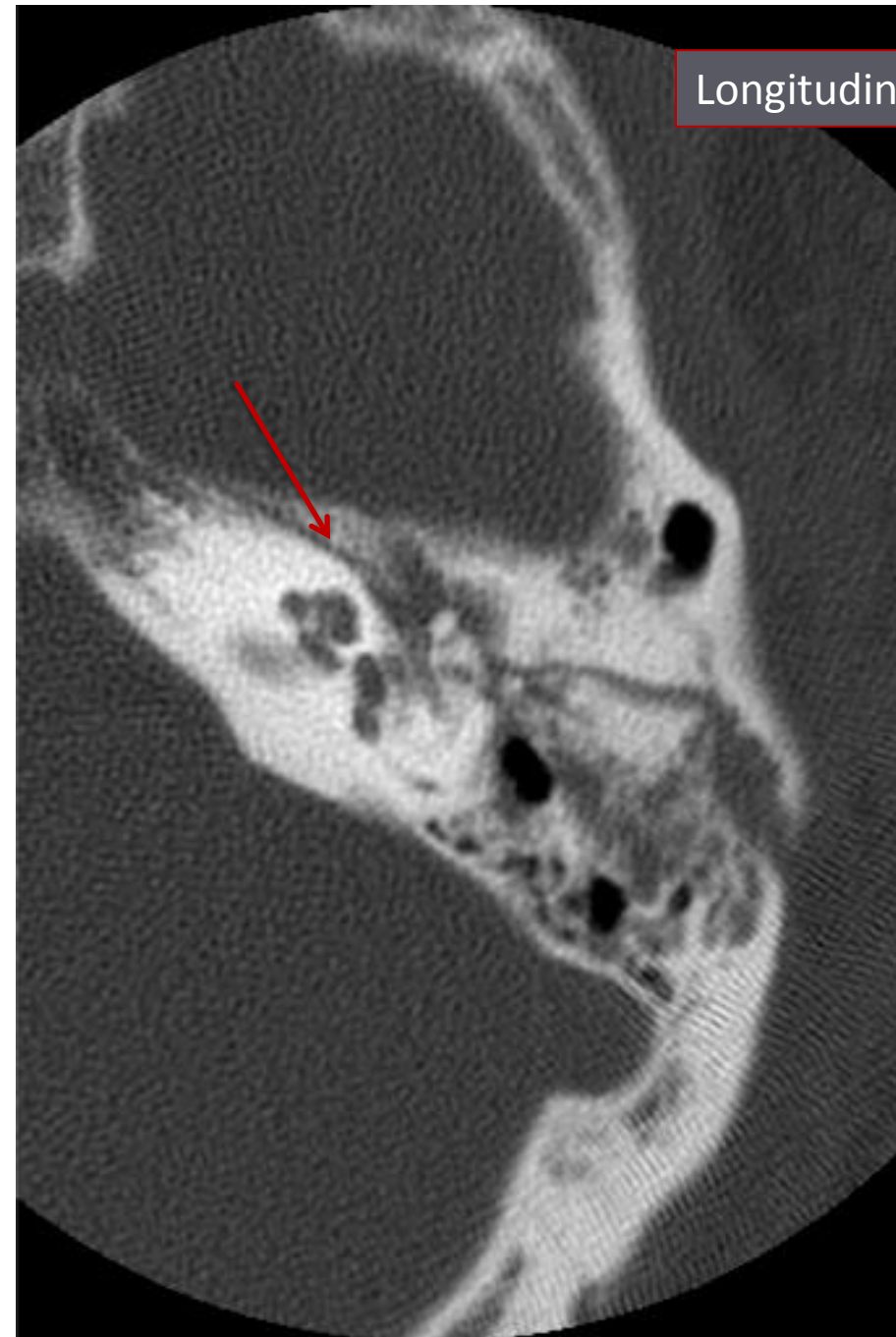
Longitudinal



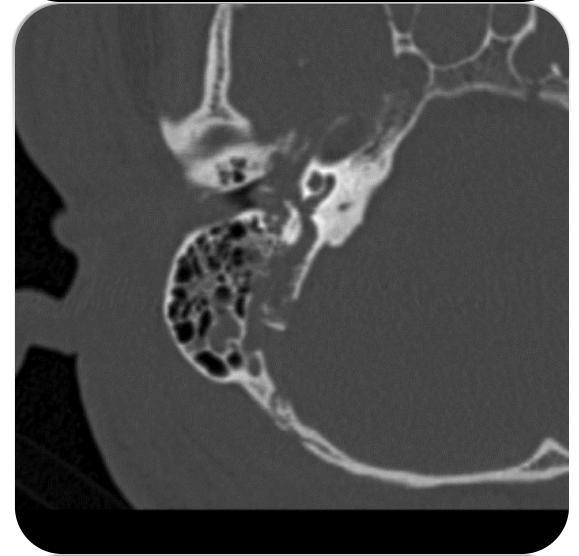
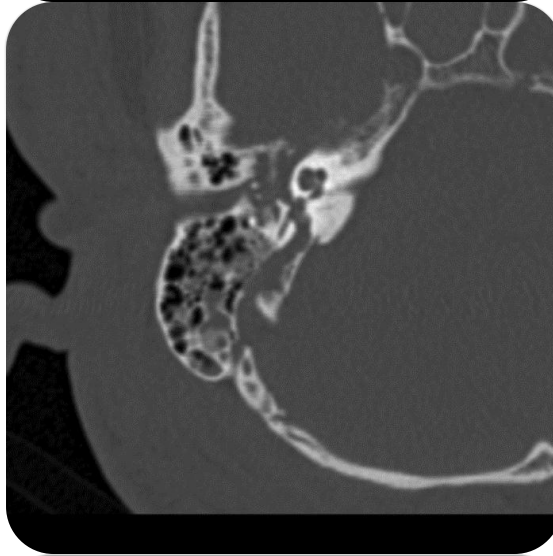
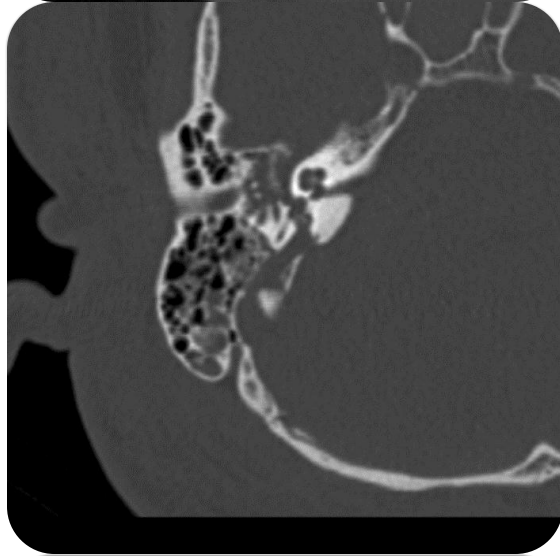
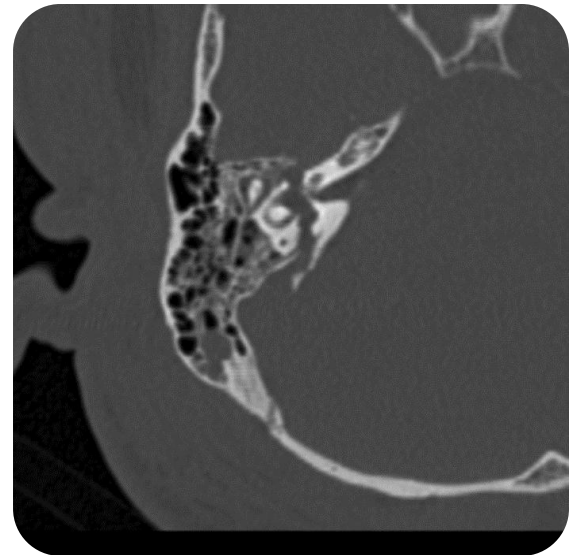
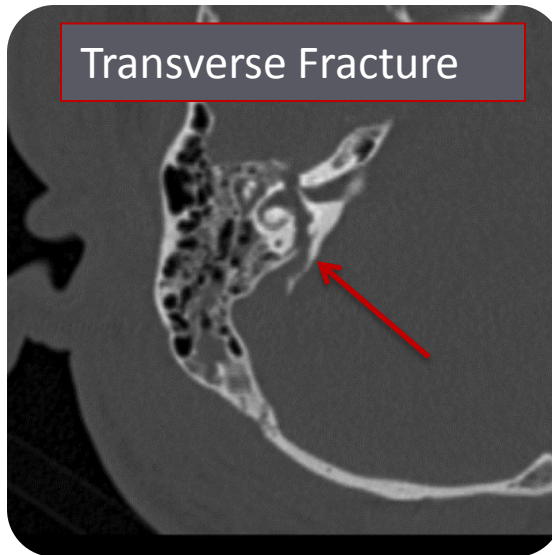
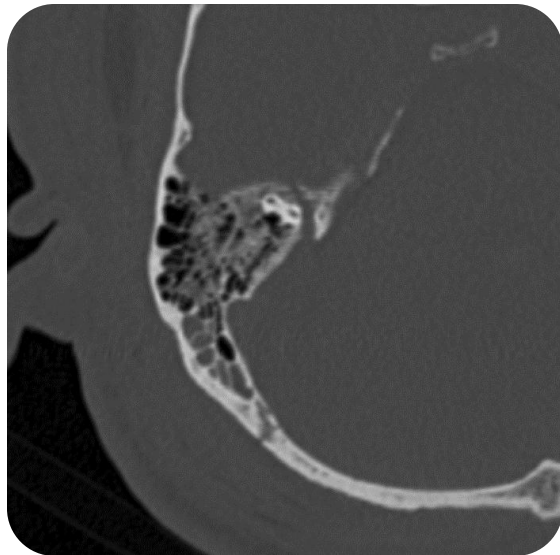


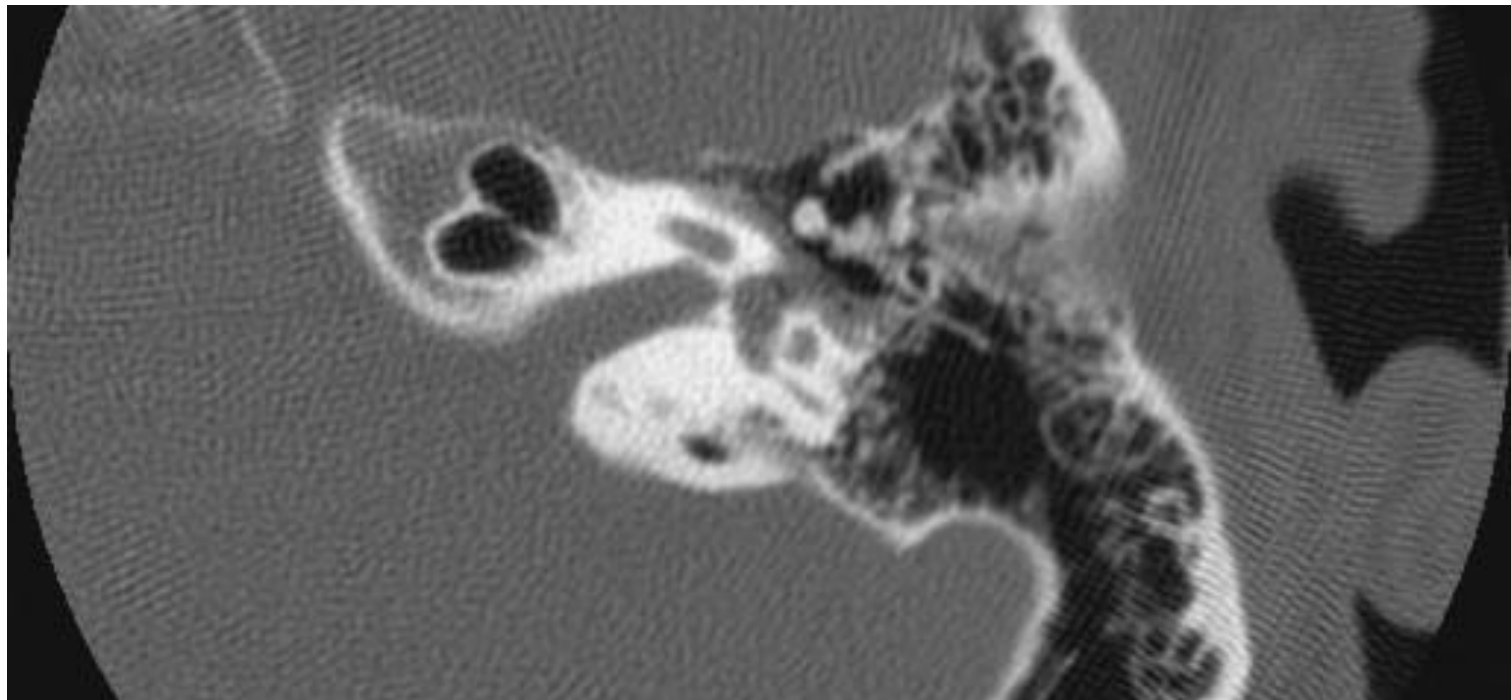
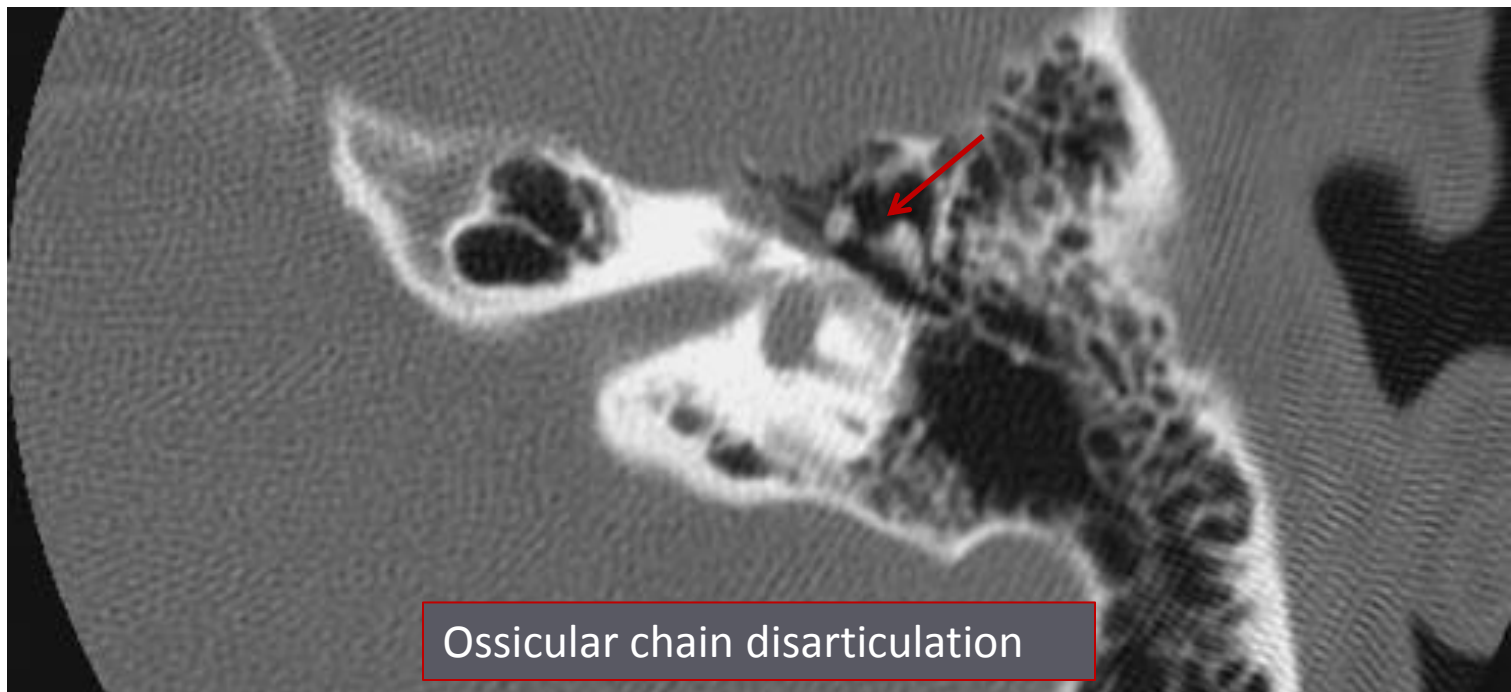


Longitudinal Fracture



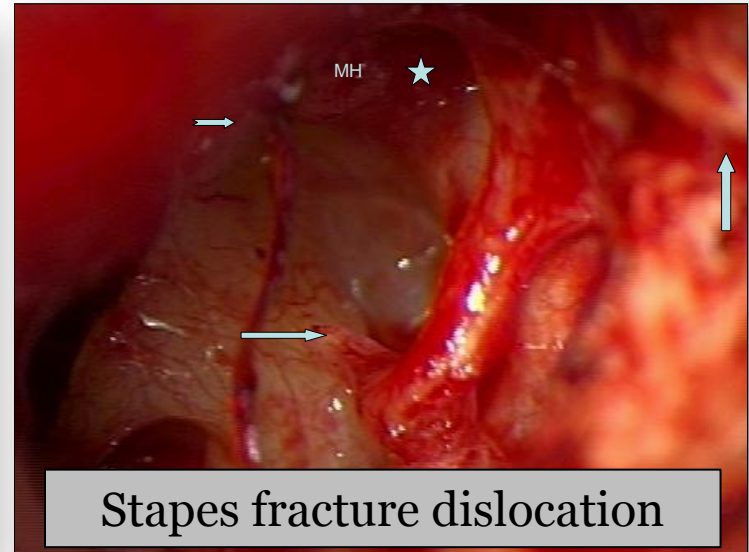
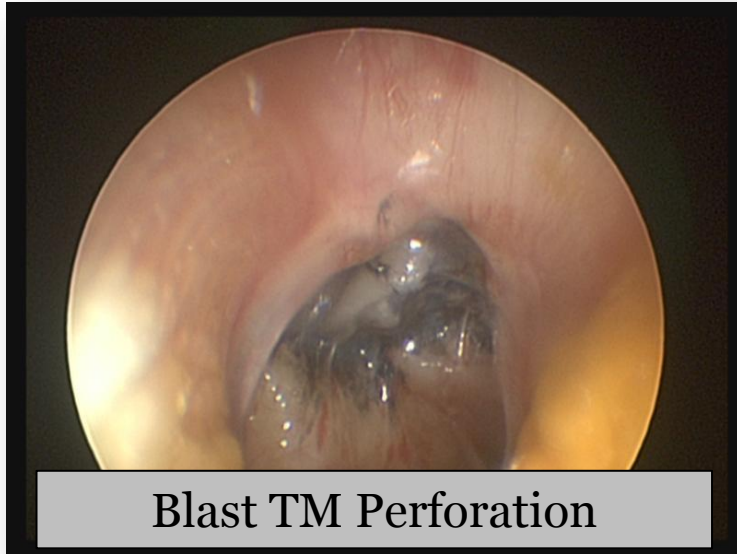
Axial CT temporal bone





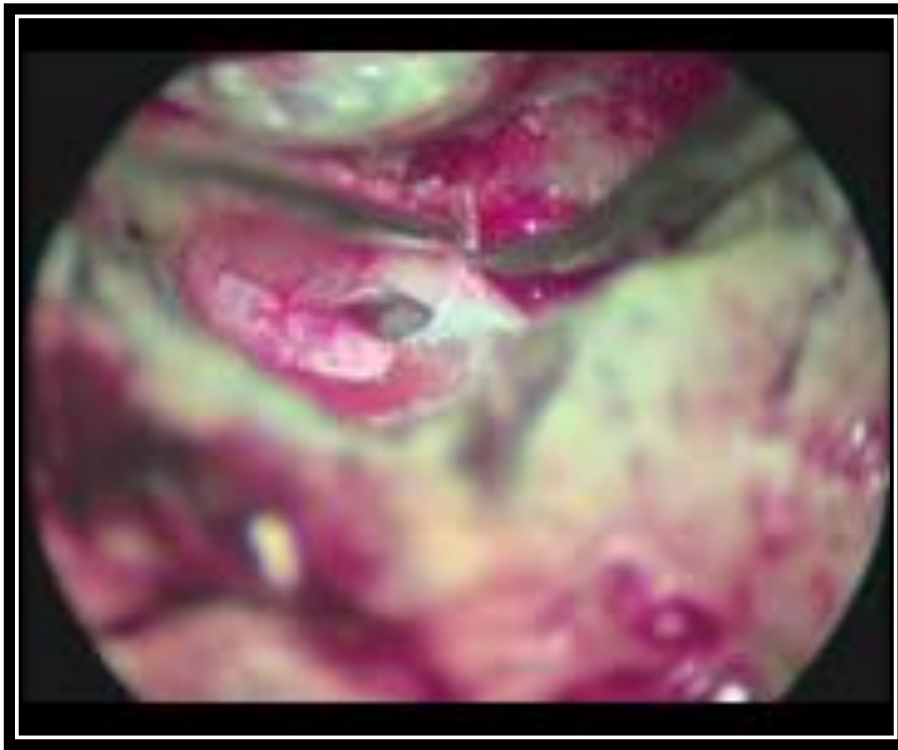


There's nothing more elusive than an obvious fact.

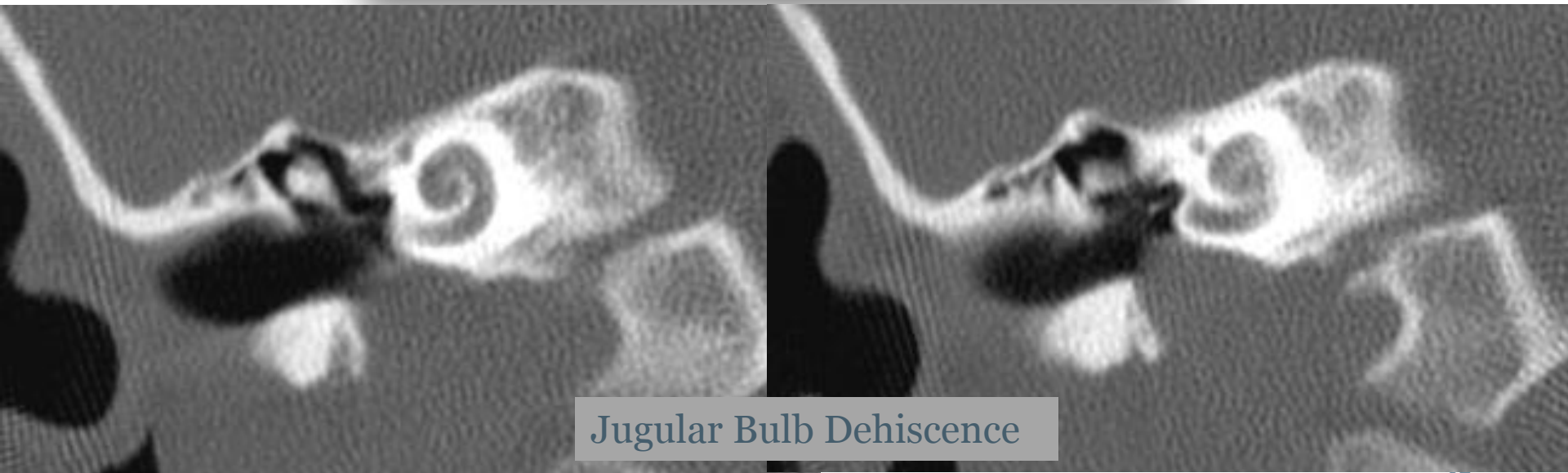
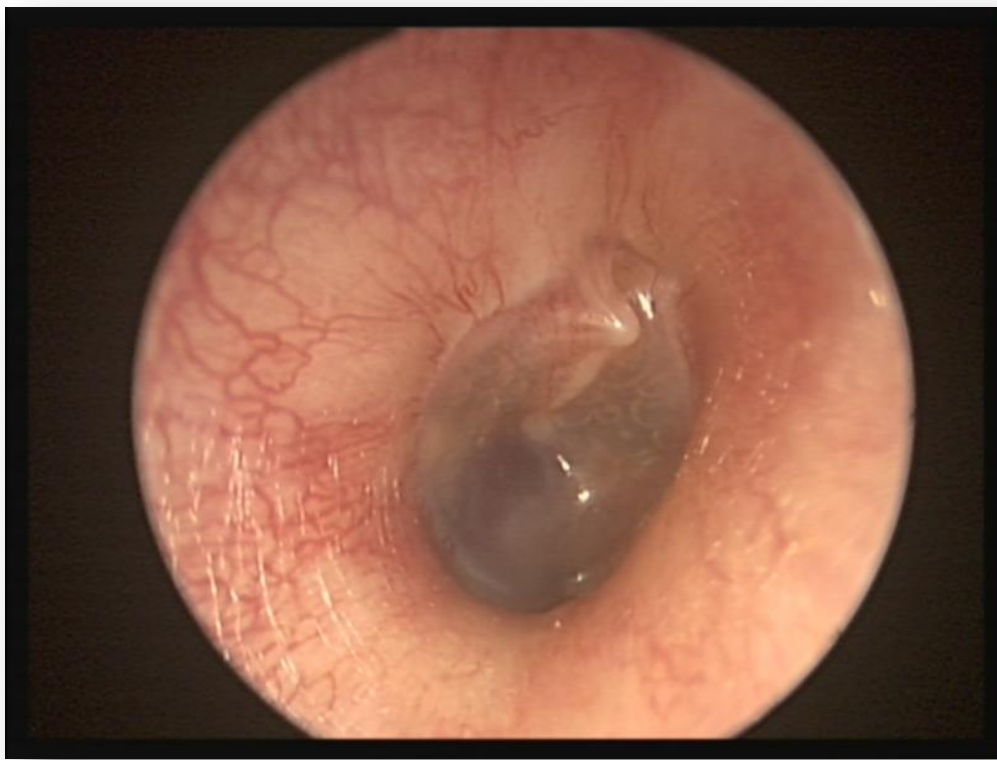


Traumatic Tinnitus

- Pulsatile Tinnitus

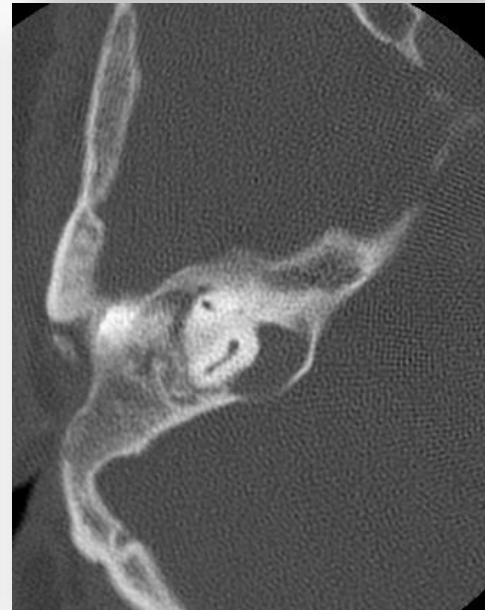
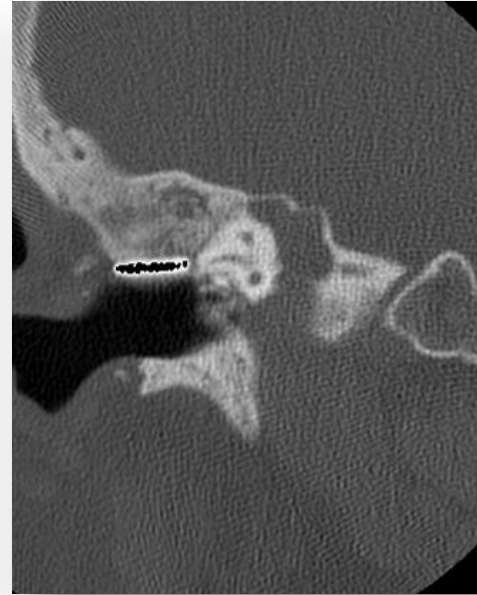
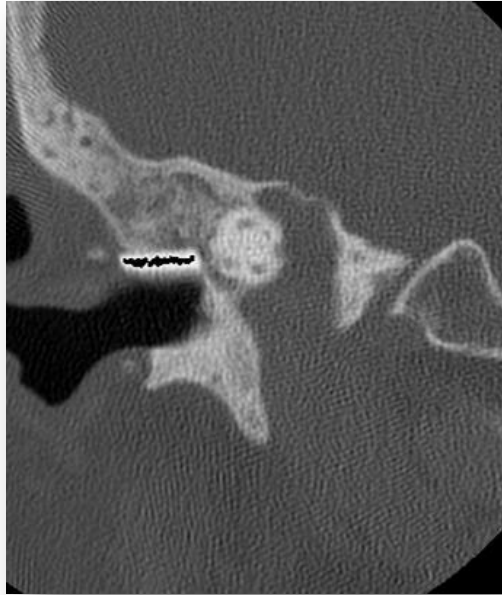


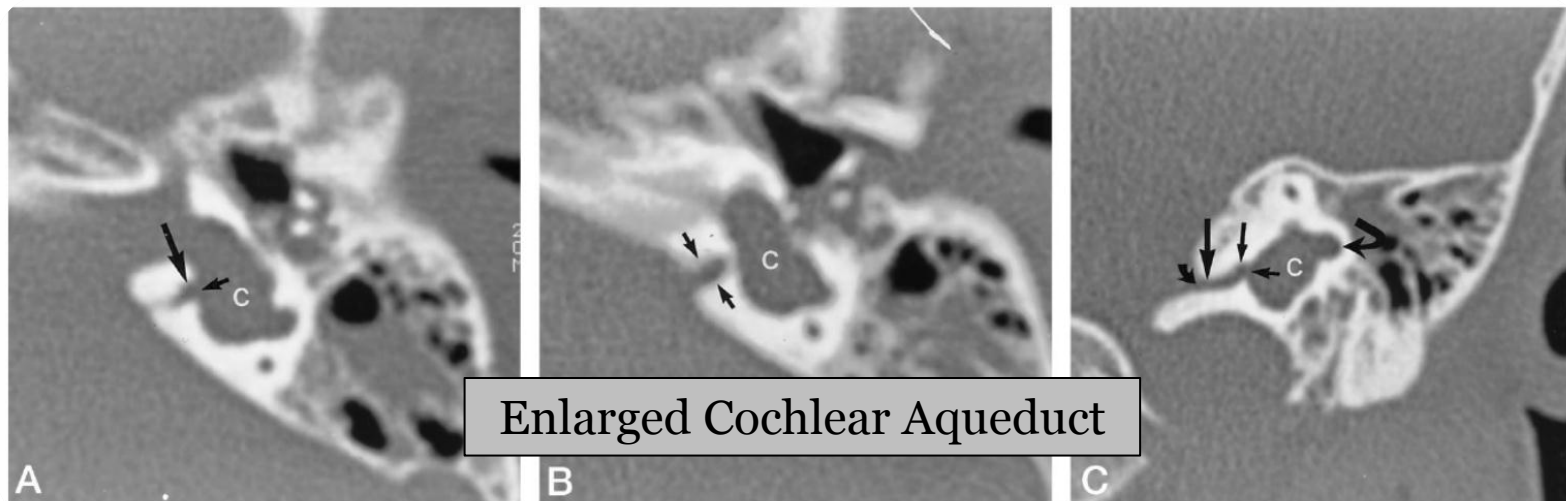
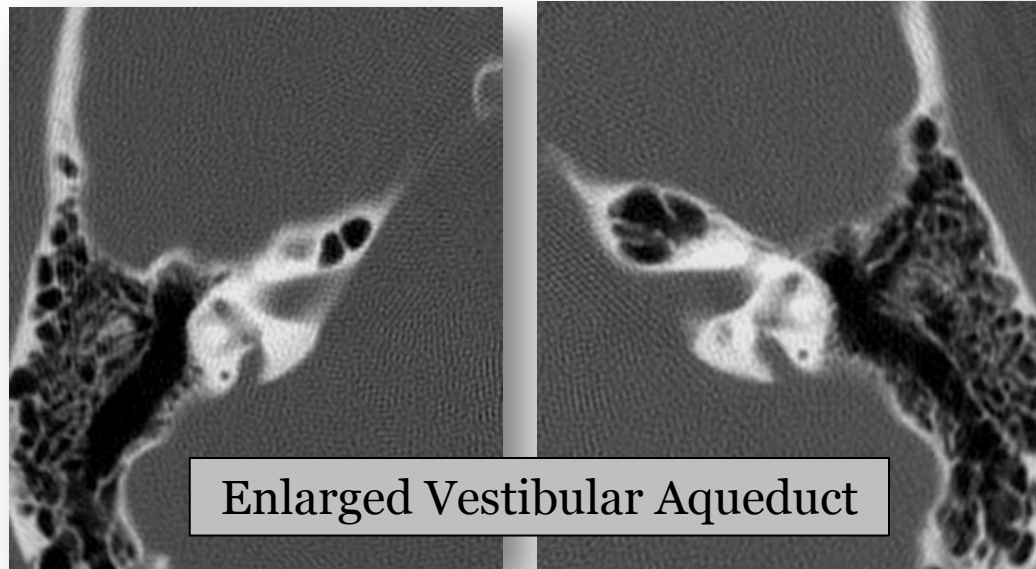
- Vascular
 - Hypertension
 - ME Fluid
 - Dissection
 - AVM
- Intracranial
 - Pseudotumor
 - Hydrocephalus
 - Congenital
- Mechanism of tinnitus - deafferentation
 - Mechanical
 - Ionic
 - Metabolic
 - Humoral
 - Oxidative
 - Vascular



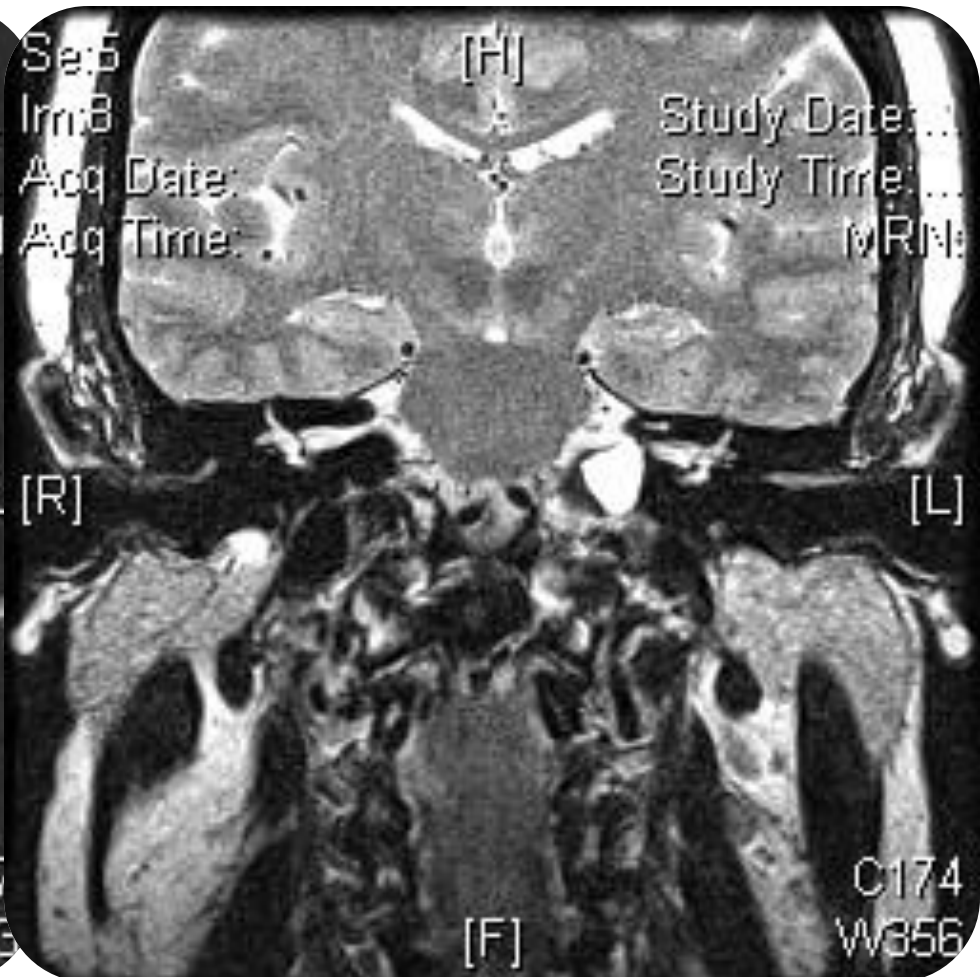
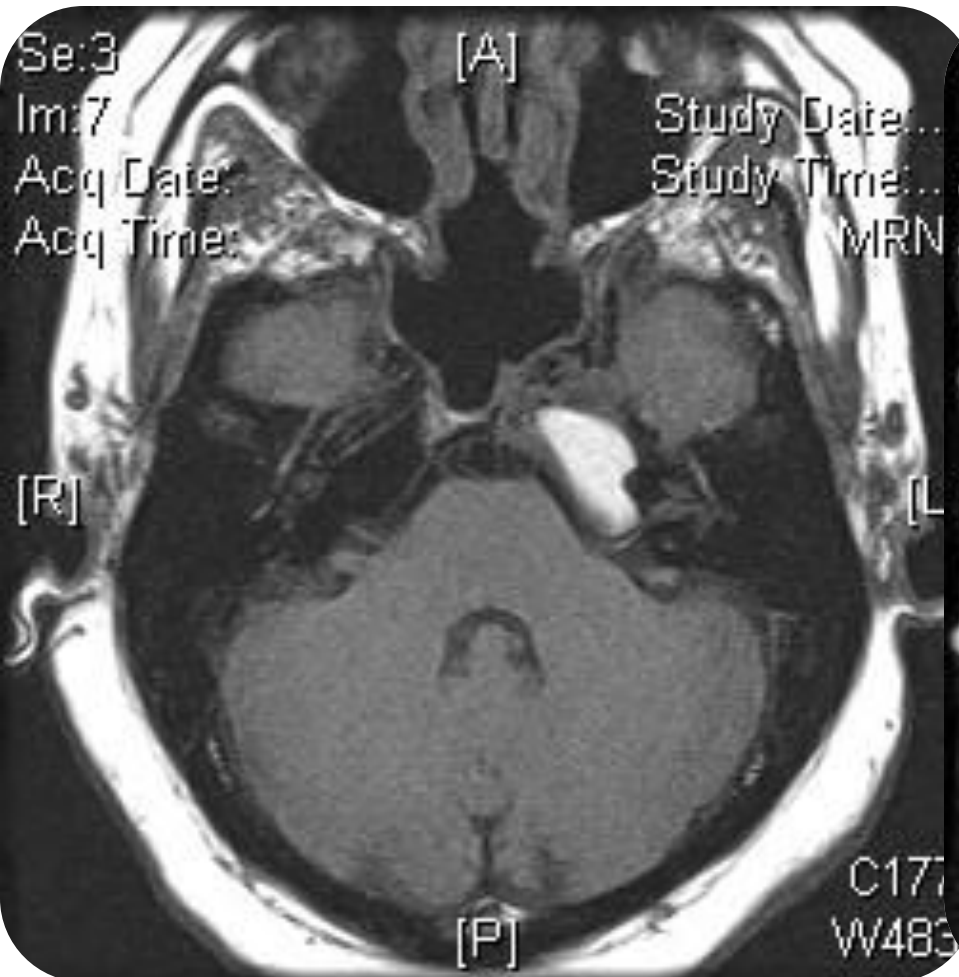
Jugular Bulb Dehiscence

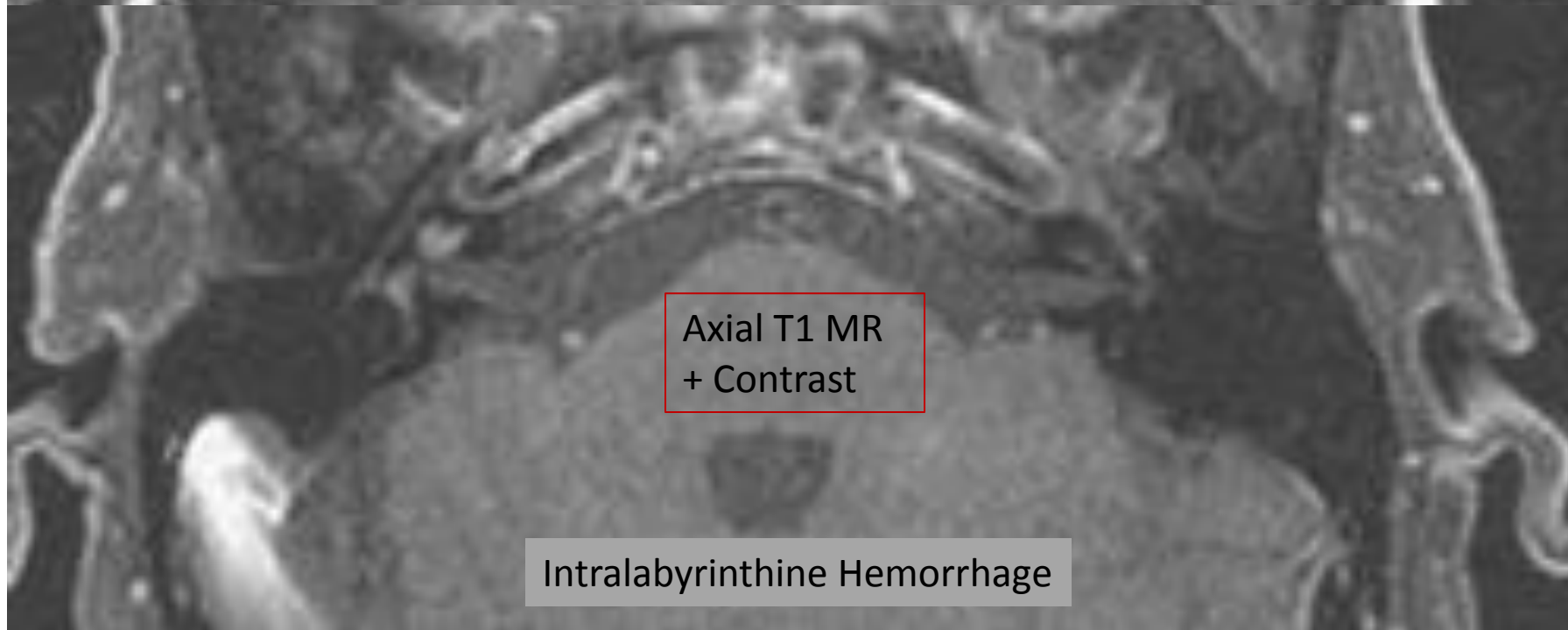
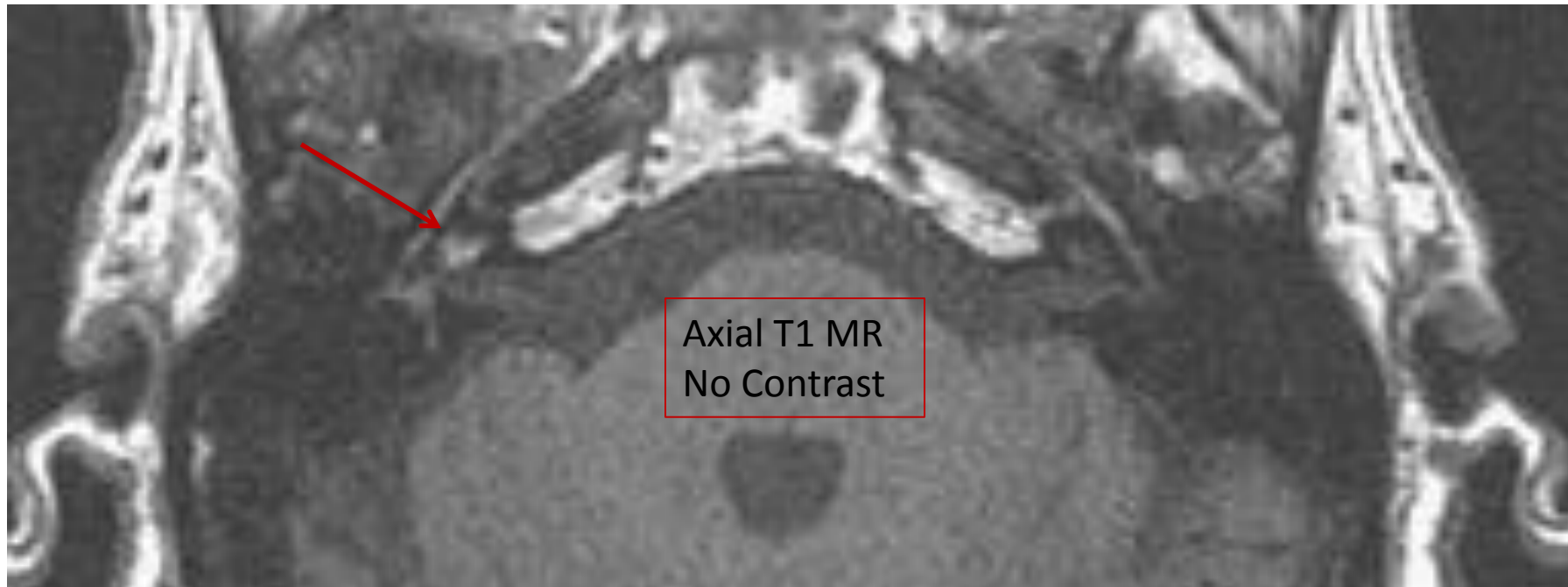
Jugular Bulb Diverticulum

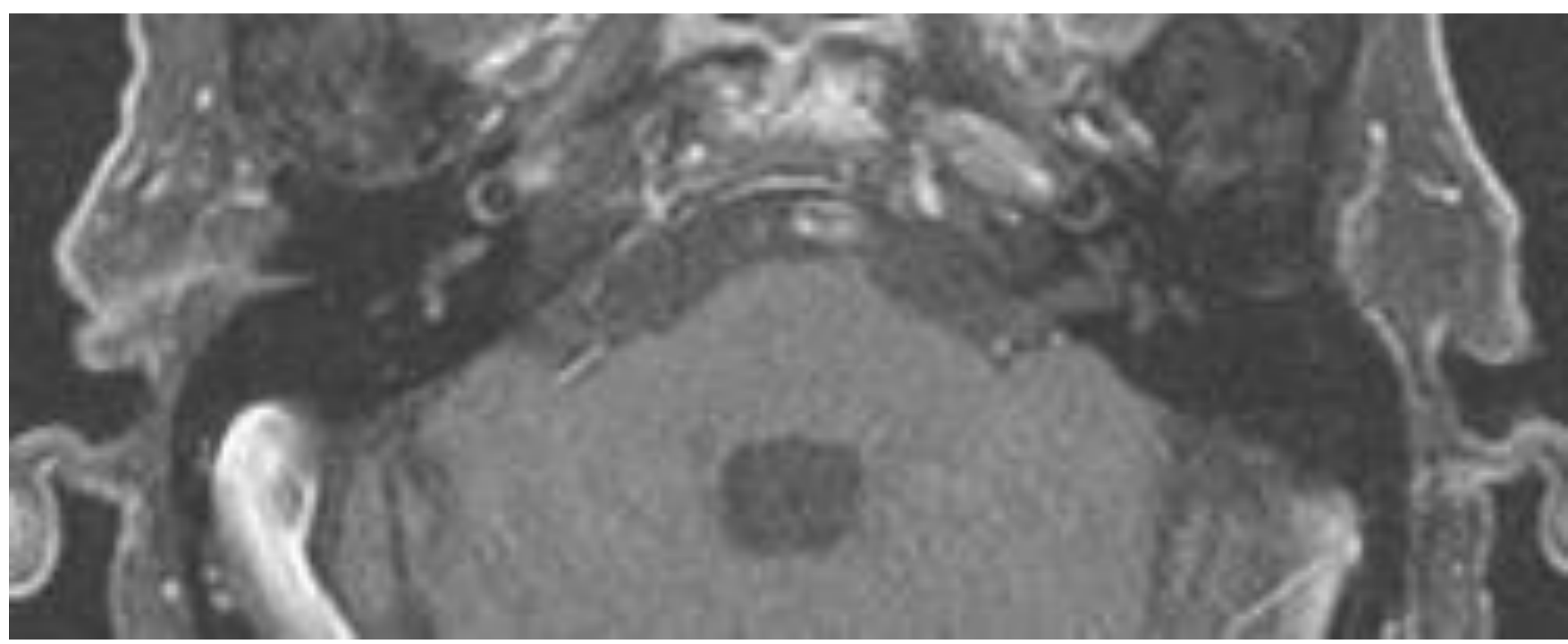
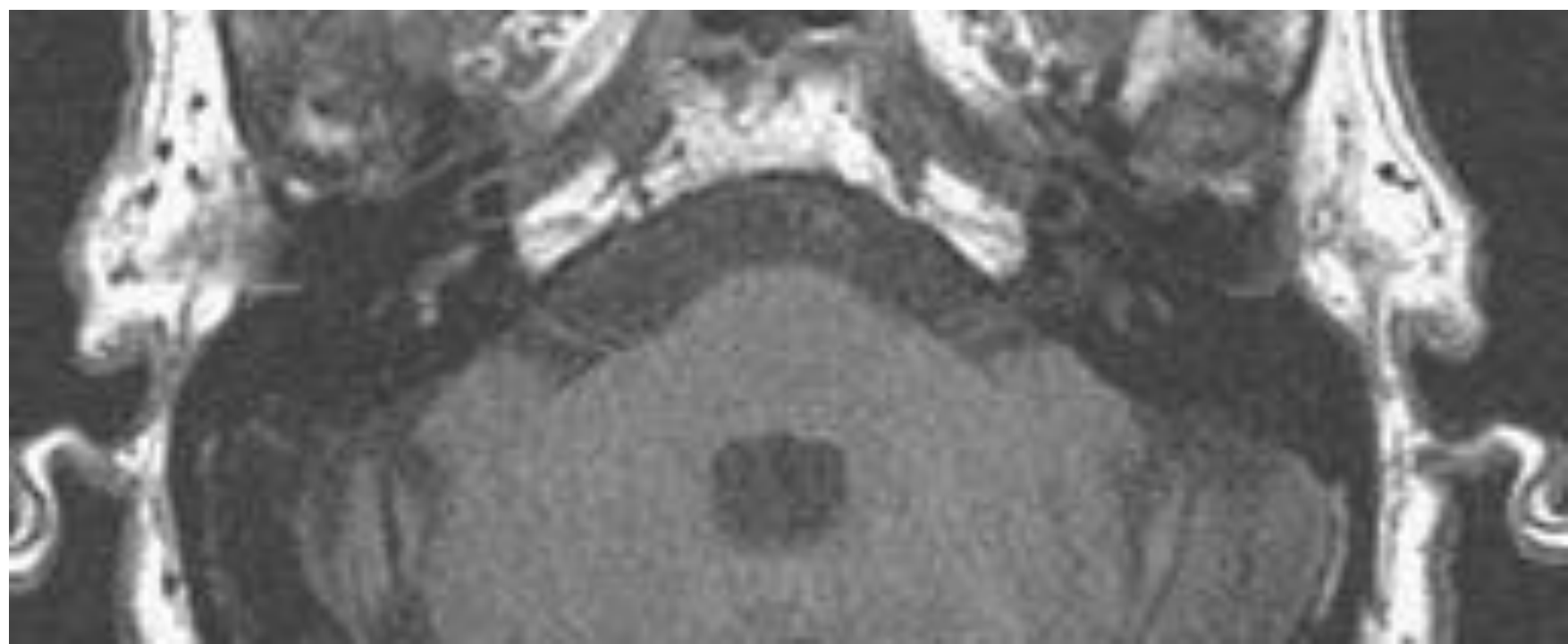


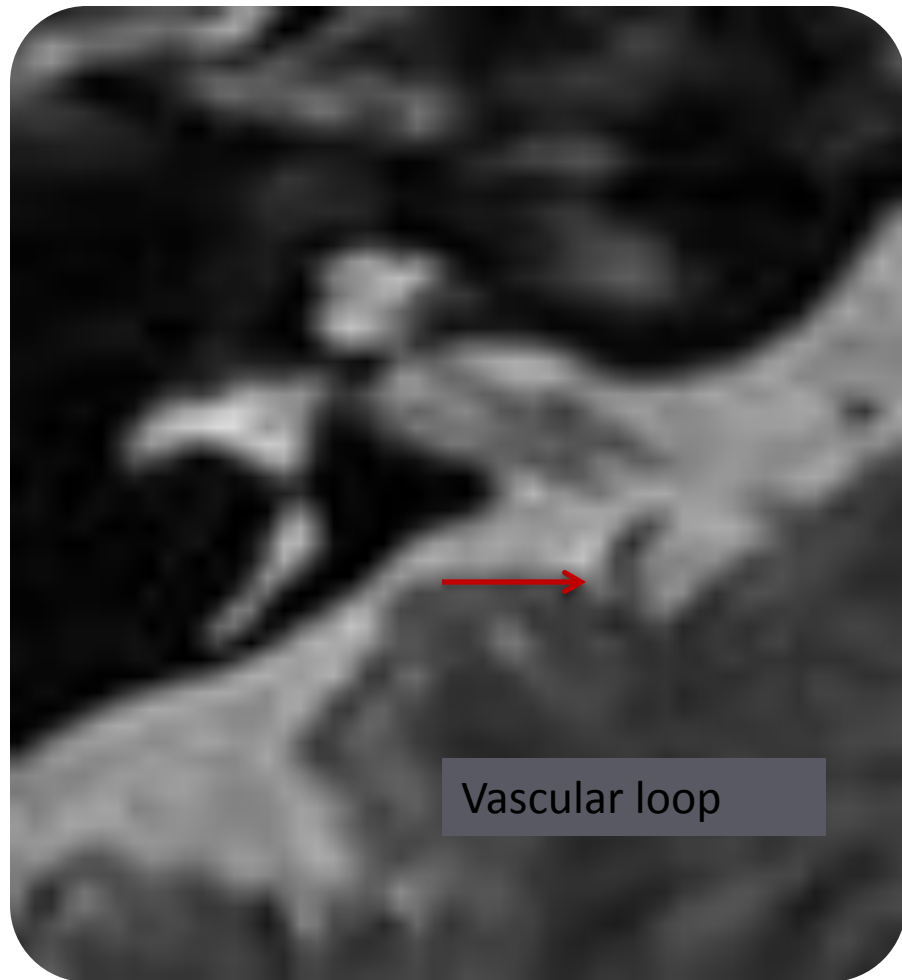


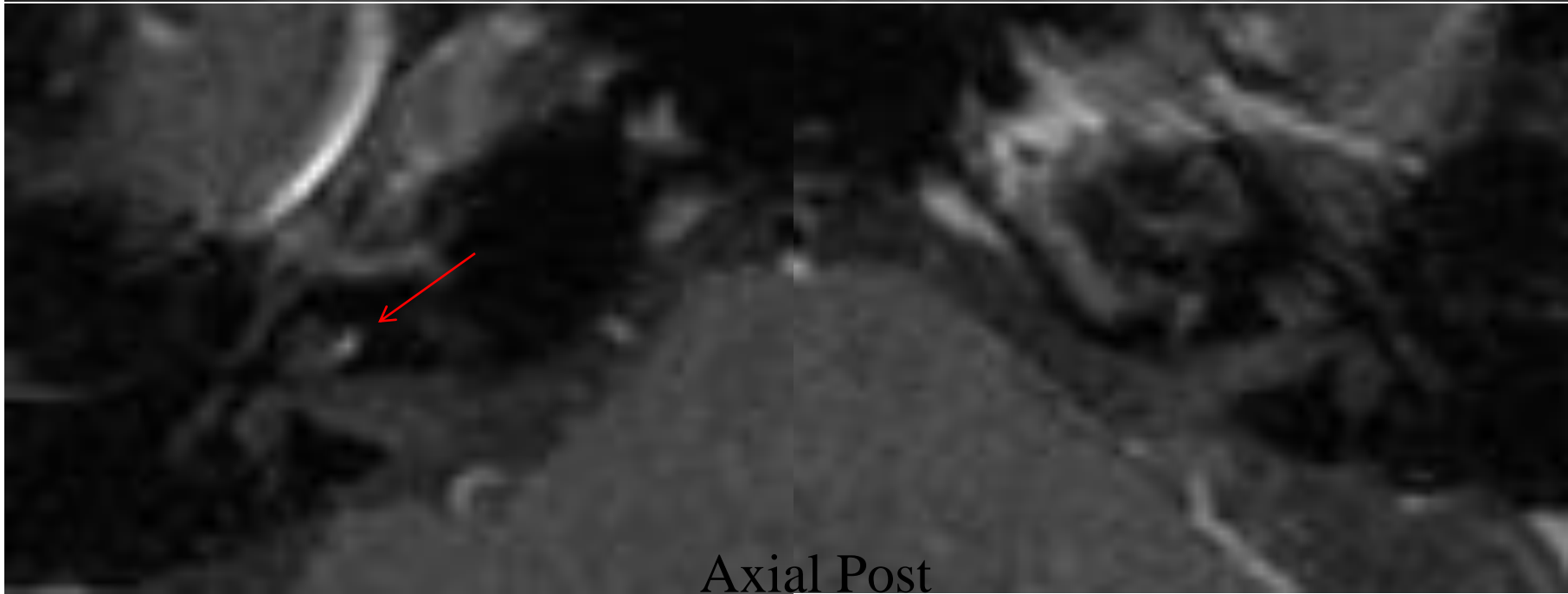
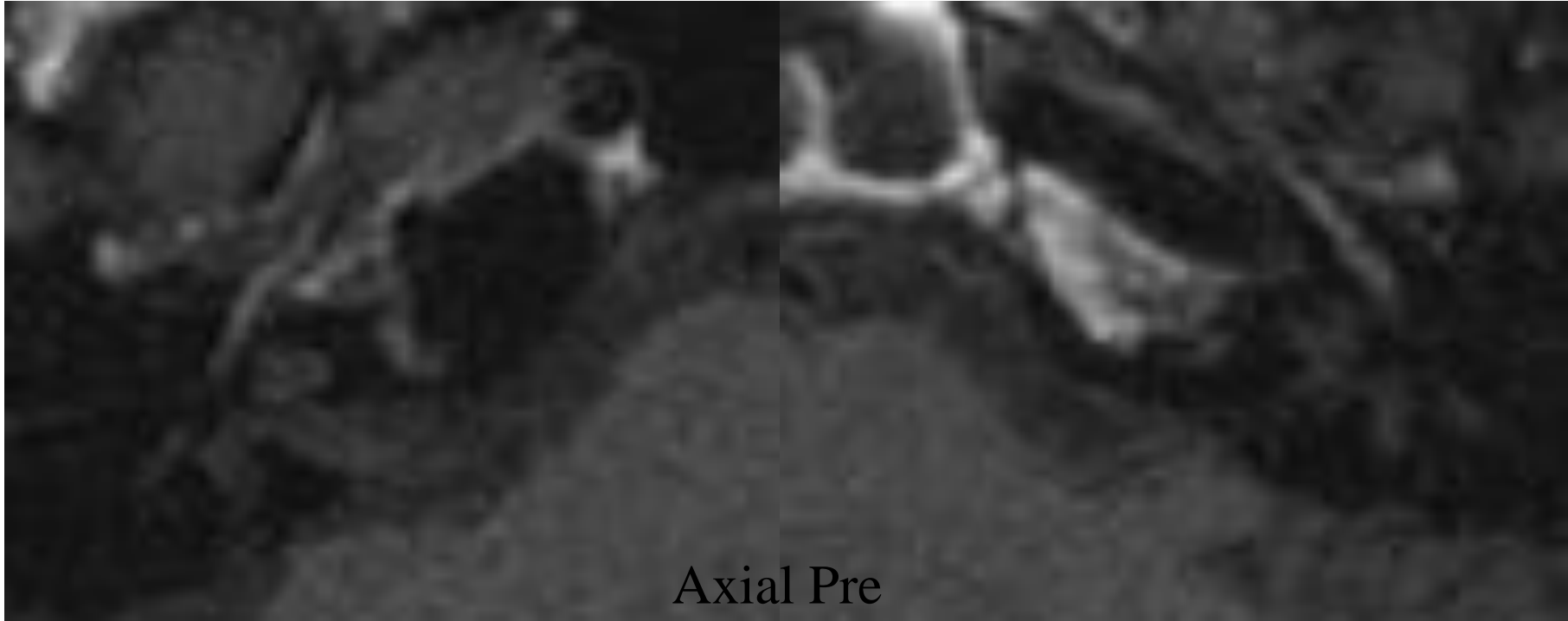
Cholesterol Granuloma of the Petrous Apex



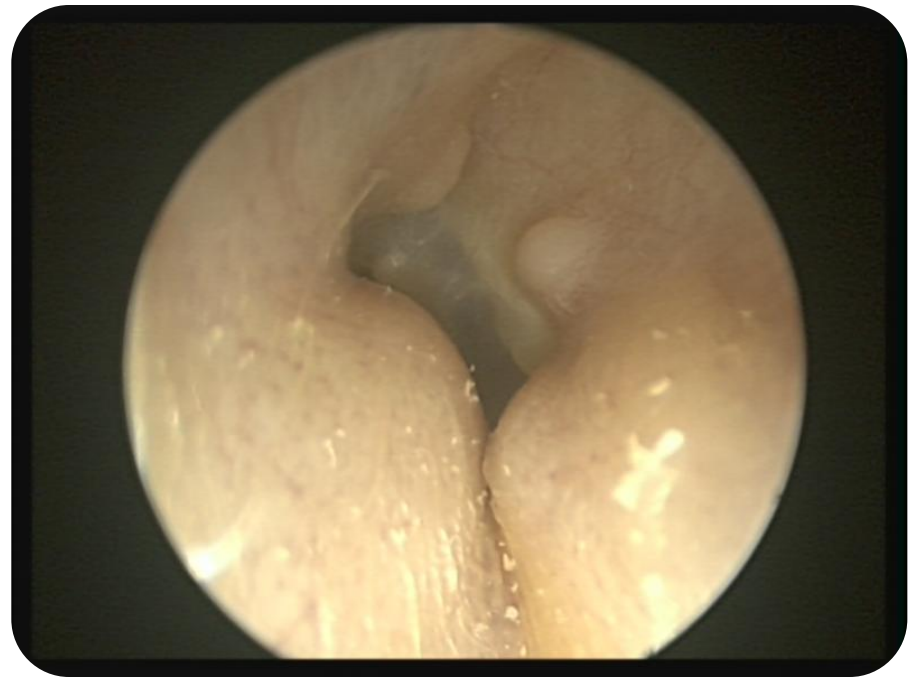






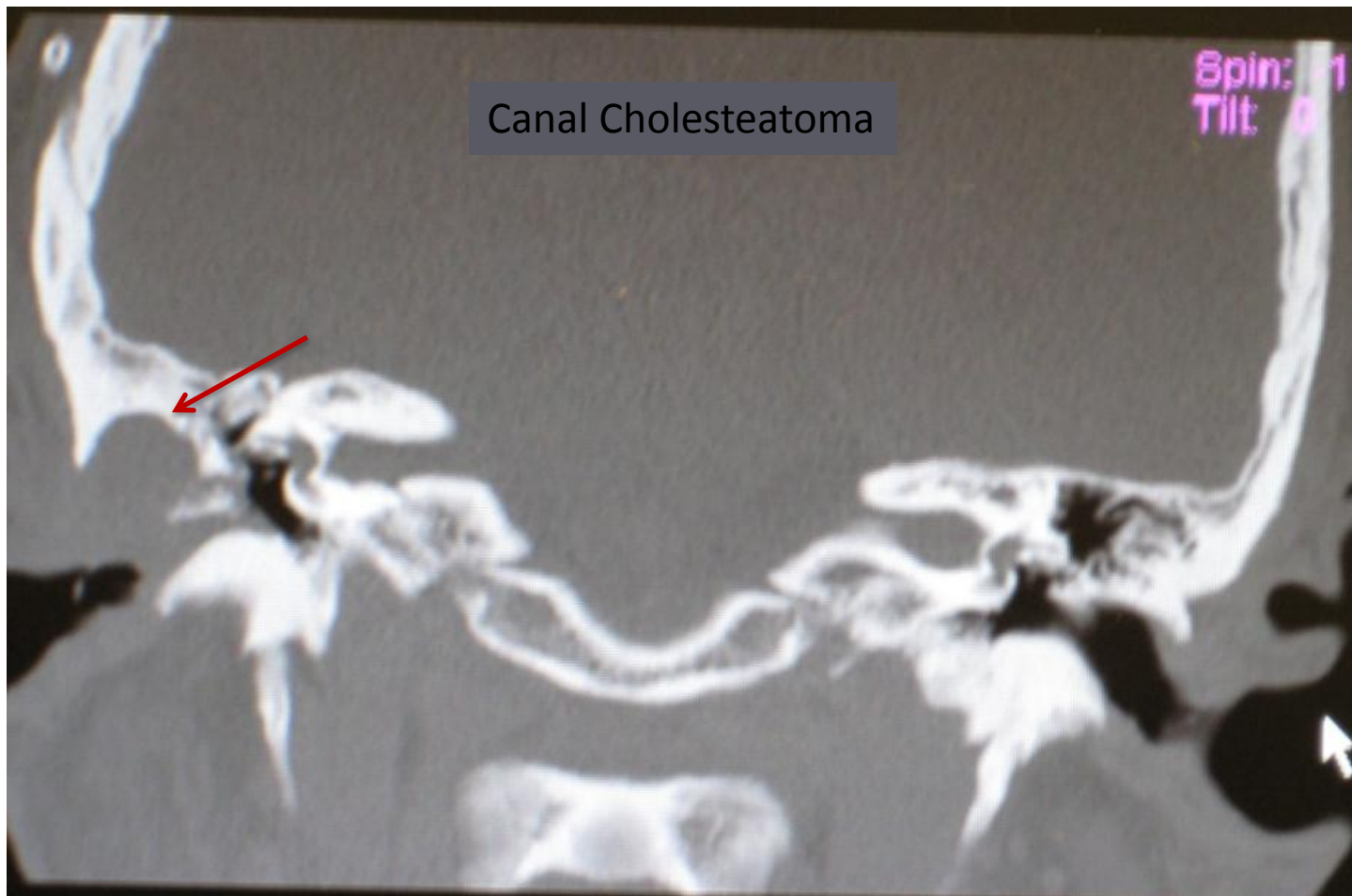


Bilateral EAC Osteoma/Exostoses



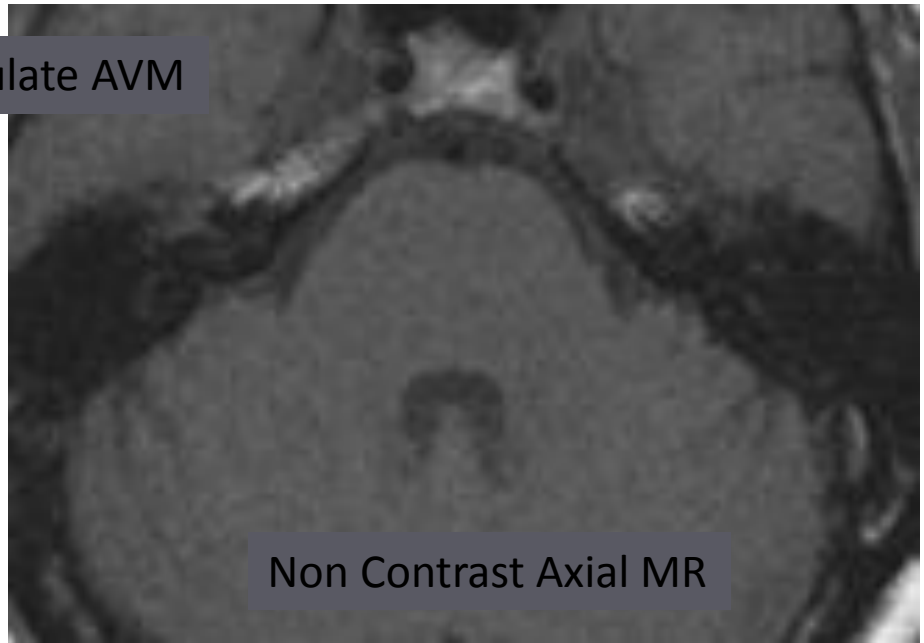
Chronic Otitis Media



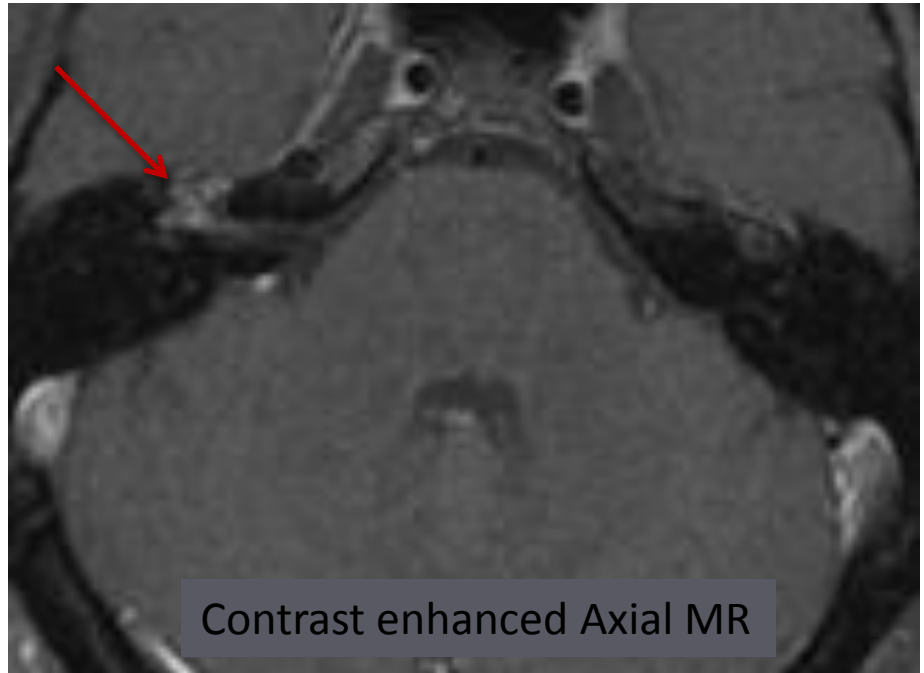
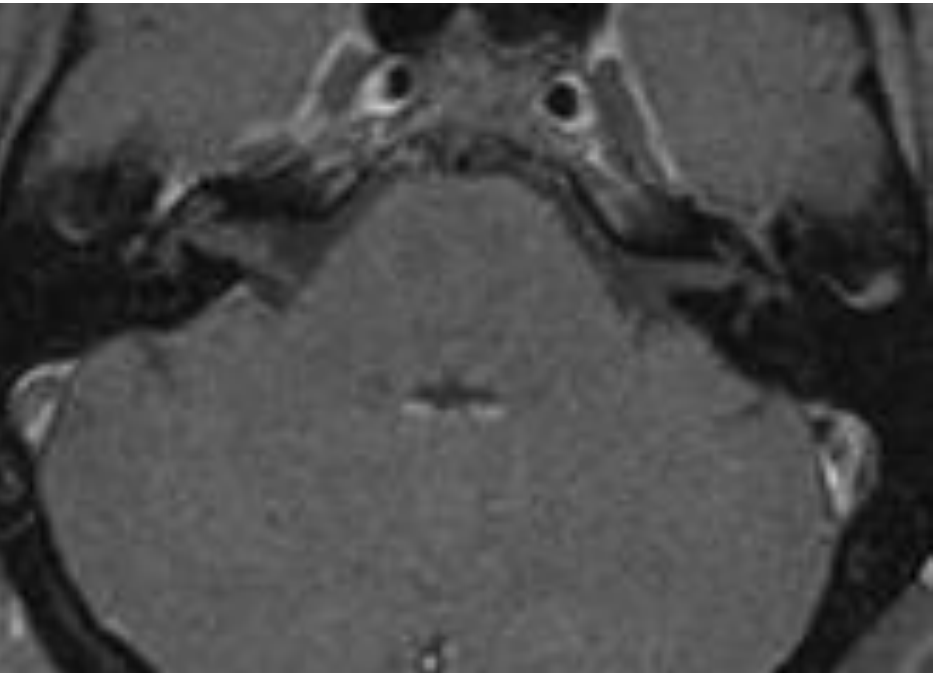




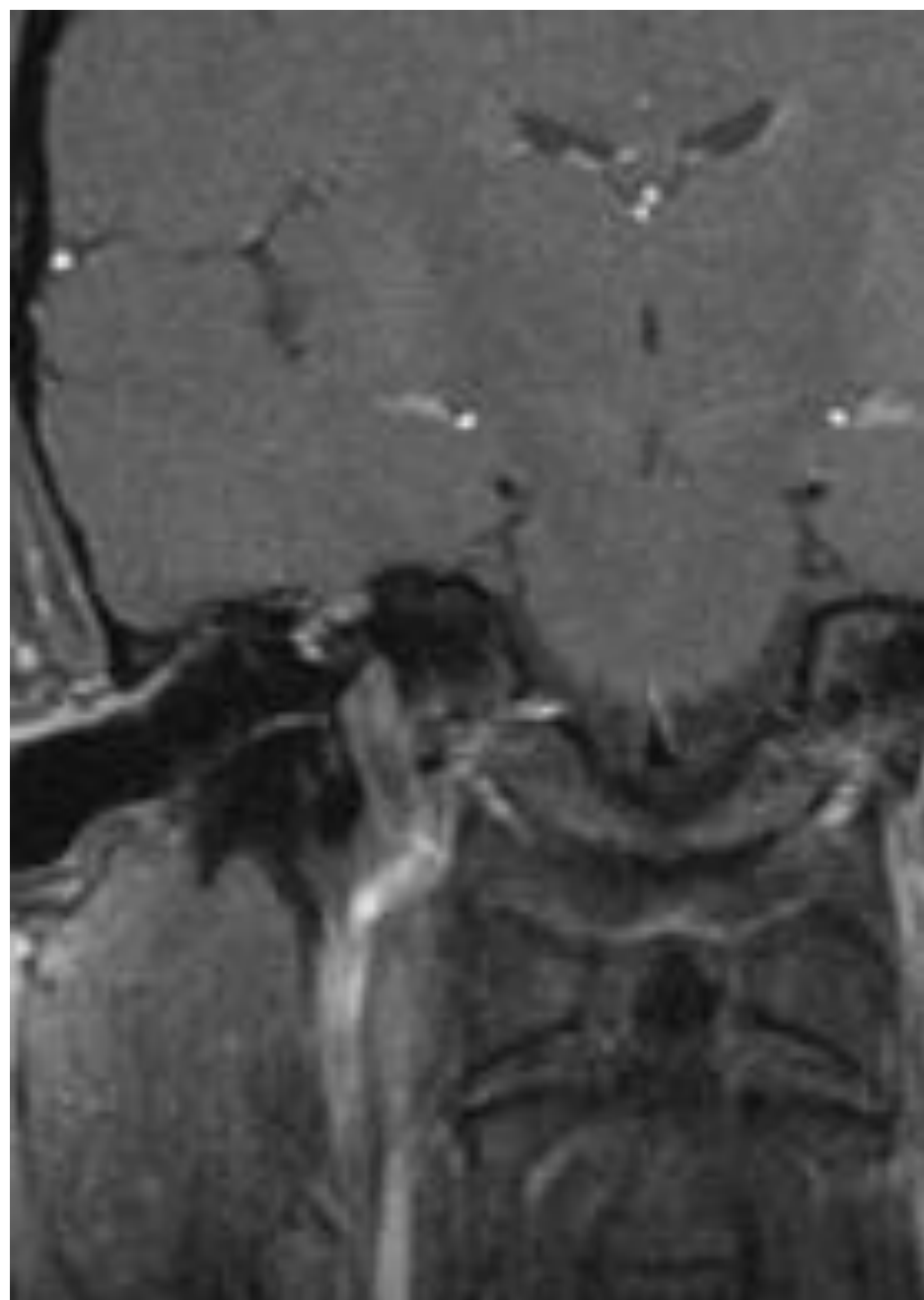
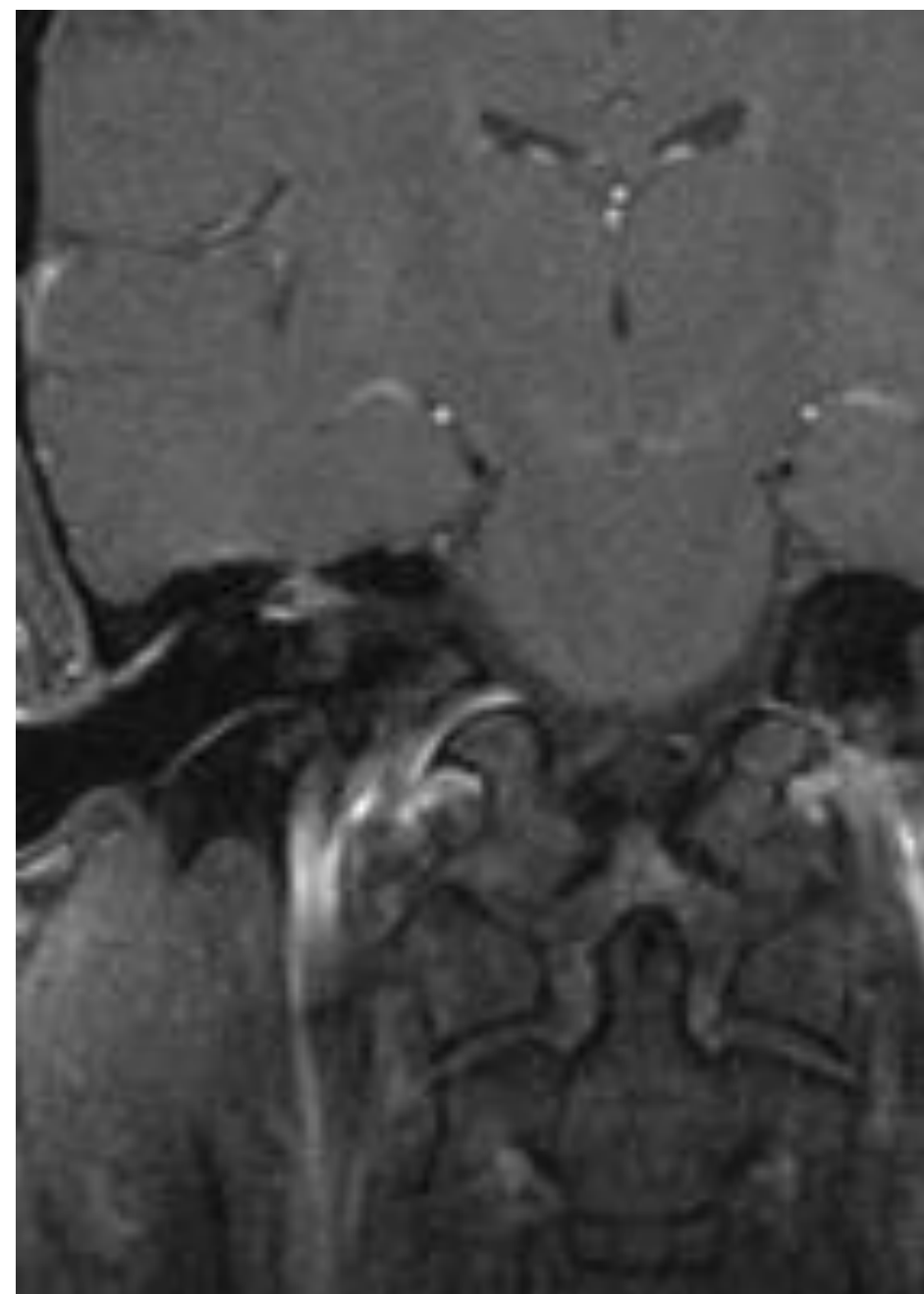
Perigeniculate AVM



Non Contrast Axial MR

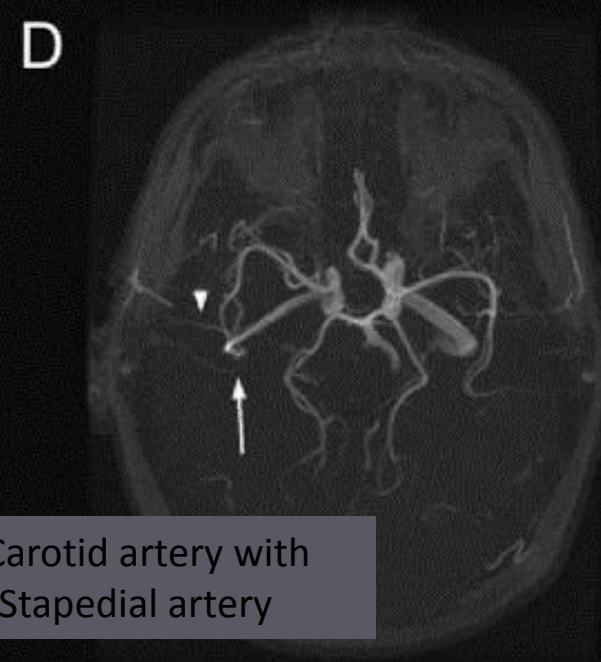
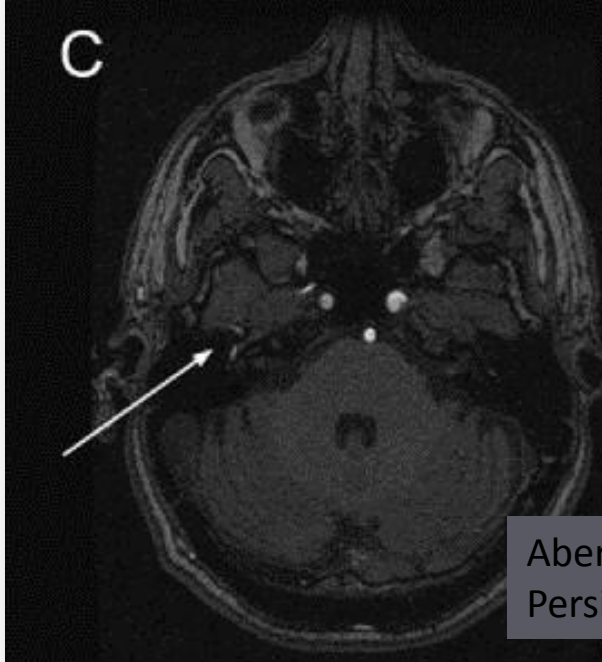
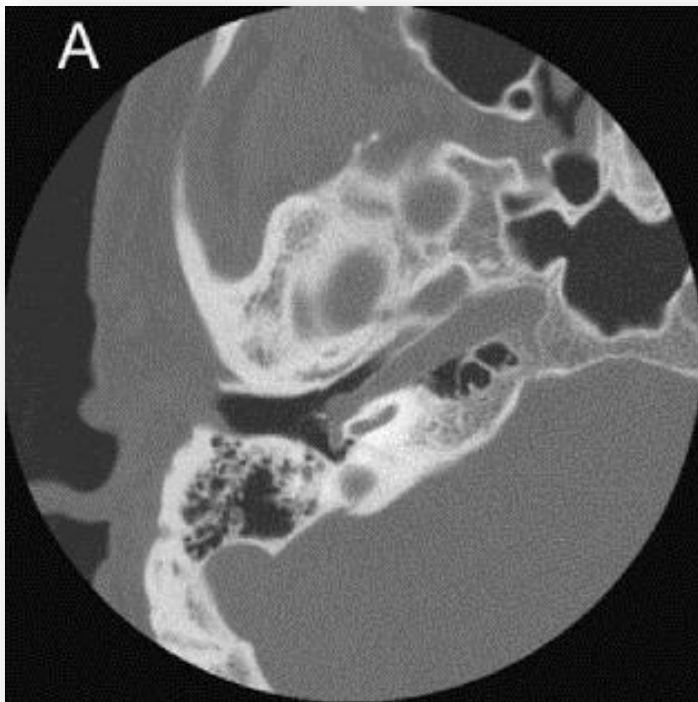


Contrast enhanced Axial MR



Carotid artery diverticulum





Aberrant Carotid artery with
Persistant Stapedial artery

SUMMARY

- Subjective tinnitus without objective findings is common
- Tinnitus varies in presentation and disability
- Tinnitus is a comorbid finding associated with multiple other injuries
- Still much to be learned





